SONY

3-786-852-11 (1)

Video Cassette Recorder

VO-9850P

Operating Instructions page 2

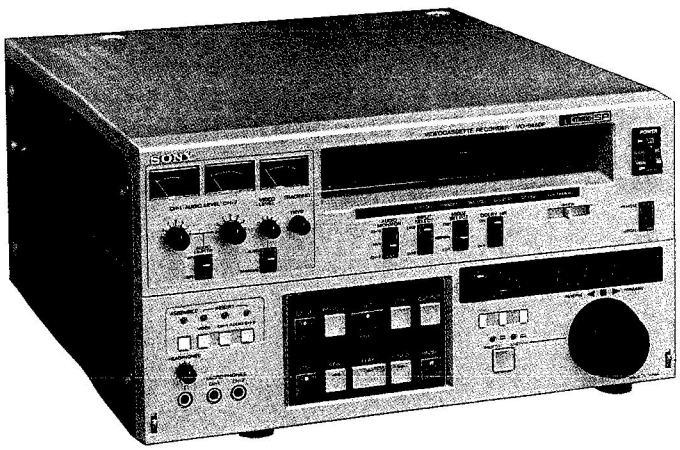
Before operating the unit, please read this manual thoroughly and retain it for future reference.

Mode d'emploi page 48

Avant la mise en service de cet appareil, prière de lire attentivement ce mode d'emploi que l'on conservera pour toute référence ultérieure.

Bedienungsanleitung Seite 94

Vor der Inbetriebnahme lesen Sie diese Anleitung sorgfältig durch und bewahren Sie sie zum späteren Nachschlagen auf.



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WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

Caution
Television programmes, films, video tapes and other materials may be copyrighted.
Unauthorized recording of such material may be contrary to the provisions of the copyright laws.

NOTICE FOR THE CUSTOMERS IN THE UNITED KINGDOM

WARNING FOR THE CUSTOMERS IN THE UNITED KINGDOM
THIS APPARATUS MUST BE EARTHED to your 3-pin plug in accordance with following instructions.

IMPORTAMT
The wires in this mains lead are coloured in accordance with the following code:

Green-and-yellow:	Earth (safety earth)
Blue:	Neutral
Brown:	Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured marking identifying the terminals in your plug proceed as follows:
The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked with the letter E or by the safety earth symbol ⏚ or coloured green or green-and-yellow.
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

NOTE
This appliance conforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

Table of Contents

General 4
Precautions 5
New recording/playback system (SP system) 6
Difference and compatibility among three modes 7
Location and function of parts and controls 8
  Front panel 8
  Rear panel 14
On video cassettes 16

Recording and Playback
Connections 18
  Connections for recording 18
  Connections of headphones and microphones 19
  Connections for playback 19
Preparation 20
Recording 21
Playback 23
  Operation 23
  Adjusting a playback picture 24
  Search operation 25
  To locate a desired point quickly 26
  Playback using the PREROLL button 26
  Playback using a time base corrector 27
Recording and playback of time code 28
Rack mounting 30

Editing
Editing modes 32
Editing with the PREROLL button 33
  Editing a camera picture 33
Automatic editing 35
  Connections 35
  Preparation 36
  Operation 37

Dial menu operation 38
  Contents 39
  Operation 40
Specifications 44
Troubleshooting 46
  Video head cleaning 47
  Video head replacement 47

General

High-quality picture with a new recording/playback system

Recording and playback using the newly developed SP (Superior Performance) system and SP tapes specially designed for the SP system, provide clearer and sharper pictures than before.

Two recording modes and three playback modes

The VO-9850P is capable of recording in the SP and high-band modes, and of playing back in the SP, high-band and low-band modes.

HI-Fi sound

Dolby NR* C type noise reduction system permits high sound quality with reduced noise. The signal-to-noise ratio of 70 dB can be obtained (KSP or KSP-S tape) using the Dolby noise reduction system.
CanonXLR 3-pin connectors usually used for professional audio equipment are employed for the audio inputs and outputs.

Search operation

A search dial with the shuttle and jog functions is furnished. Playgack pictures can be viewed at various speeds from 1/30 times to 8 times normal speed as well as in a still mode in shuttle mode. In jog mode, playback pictures from still to ± 1 time normal speed can be viewed.
As the playback can be performed in both forward and reverse directions, any desired scene can be easily found.

LED time counter

The time counter reads out the CTL signals recorded on a tape and the LEDs indicate the tape running time in hours, minutes, seconds and frames. These are useful to check the recording time of a material and the remaining time of a tape.
When the BKU-705** time code generator/reader (optional) or the BKU-704** time code reader (optional) is installed in the VO-9850P, the time code recorded on the tape is read and displayed.

Connection of a time base corrector

The best possible playback picture will be obtained by connecting a time base corrector.

Memory function using MARK IN button

A particular point on a tape can be memorized by pressing the MARK IN button and can be searched for easily afterward.

Electronic editing

All essential functions for electronic editing, rotary erase head, and capstan servo, framing servo, ϕ^2 servo loop circuit are incorporated in the VO-9850P, which assures a high-quality editing with noiseless and stable picture at the edit point.
When an RM-450CE automatic editing control unit is used, an automatic electronic editing of high-quality will be possible.

Remote control

The unit is equipped with a 9-pin remote control connector. When the equipment which has a 9-pin remote connector such as an RM-450CE editing control unit, is connected here, the VO-9850P can be remotely controlled with this unit.
When a BKU-703** 33-pin editing interface (optional) is installed in the VO-9850P, it can be remotely controlled by the equipment with a 33-pin remote connector such as an RM-440.

Time code recording and playback

Sony prepares optional boards for time code operation such as a BKU-705** time code generator/reader, and BKU-704** time code reader. When the board is installed in the VO-9850P, recording and playback of time code will be possible.

Dial menu operation

With the search dial, you can set time code, and change the setting value for editing.

Dubbing connectors

Connectors for editing or duplicating video signals are included.

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* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol ⊡⊡ are trademarks of Dolby Laboratories Licensing Corporation.

** For the installation of the BKU-703, BKU-704 and BKU-705, consult your Sony dealer

Precautions

On safety

- Operate the unit only with a power source specified in the "Specifications" on page 44.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by the plug. Never pull the cord itself.

On installation

- Allow adequate air circulation to prevent internal heat buildup. Do no place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near a heat source such as a radiator or an air duct, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position. Never operate the unit in a vertical position.
- Keep the unit away from equipment with strong magnets as for example a large loudspeaker.

On operation

- When the unit is not in use, turn the power off.
- Remove and store video cassettes after recording or playback.
- Never operate the unit right after having transported it from a cold location directly to a warm location.

On cleaning

Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do no use any type of solvent, such as alcohol or benzine, which might damage the finish.

On transportation

- Remove the video cassette when transporting the unit.
- Save the original carton and associated packing material. They will be useful should you have to transport or ship the unit.

If you have any questions about this unit, contact your Sony dealer.

New Recording/Playback System (SP System)

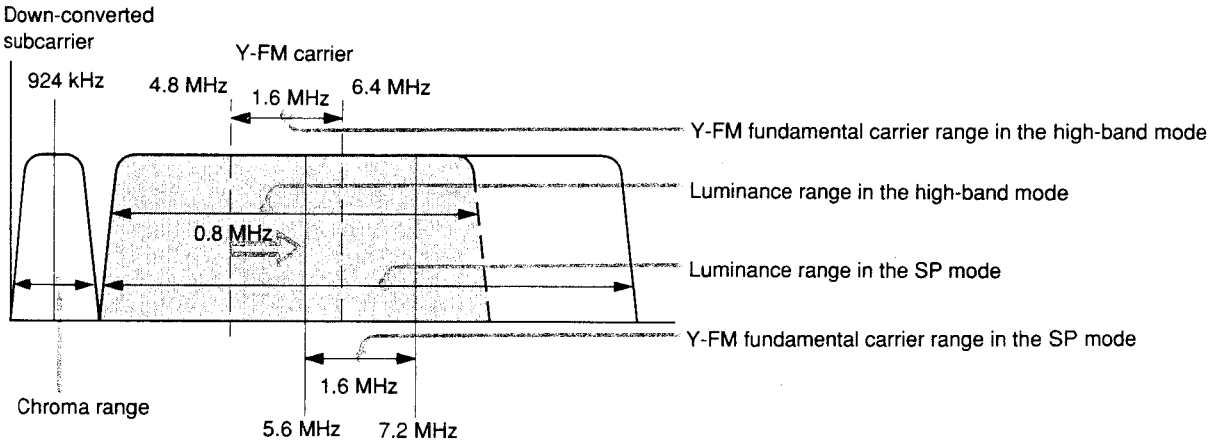
The SP (Superior Performance) system was designed to preserve full interchangeability with conventional high-band U-matic system VTRs.
In the SP mode, Y (luminance) carrier frequency which carries information on brightness is shifted up about 0.8 MHz, creating a wider bandwidth to be used for recording and playback (below), and consequently making possible a higher quality picture.

To take full advantage of the SP system, a new SP series cassette tape has been developed with a higher frequency response than those of conventional U-matic tapes. SP recording and playback with this new tape provide a sharp and clear picture with minimal color blurring.

Interchangeability of SP and conventional recordings

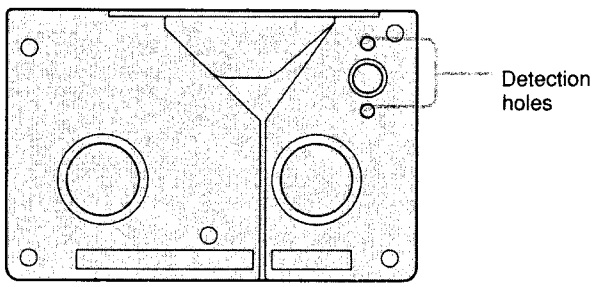
The chroma subcarrier frequency which carries information on colors is kept unchanged at 924 kHz. Although the frequency of the Y carrier is shifted up 0.8 MHz, the deviation is kept unchanged by 1.6 MHz.

This means recording and playback in the high-band mode is also possible simply with the automatic switching of an internal circuit.



KSP series U-matic cassette tape

This new series tape with high durability was specially developed for SP mode recording/playback and features characteristics best suiting the SP system. SP series cassettes have detection holes on the bottom of the cassette shell to automatically set SP type VTRs in the SP mode recording.



Difference and Compatibility among Three Modes

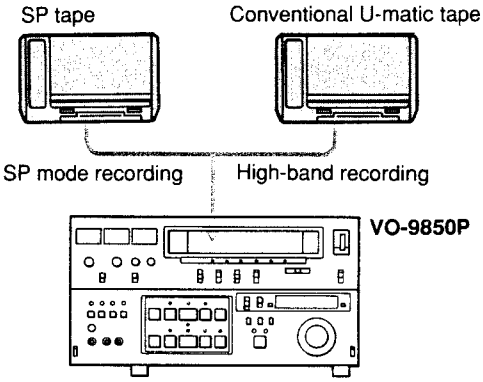
The VO-9850P can record a video signal in either the SP or high-band mode, and can play back the tape recorded in the SP, high-band or low-band mode.

The carrier frequencies are different among these three modes as shown below. The cassette type which can be used for recording in each mode is also shown in the table below.

	SP mode	High-band mode	Low-band mode
Y carrier	5.6 – 7.2 MHz	4.8 – 6.4 MHz	4.0 – 5.6 MHz
Subcarrier	924 kHz	924 kHz	685 kHz
Usable cassette	KSP, KSP-S	KSP, KSP-S, KCA, KCS	KSP, KSP-S, KCA, KCS

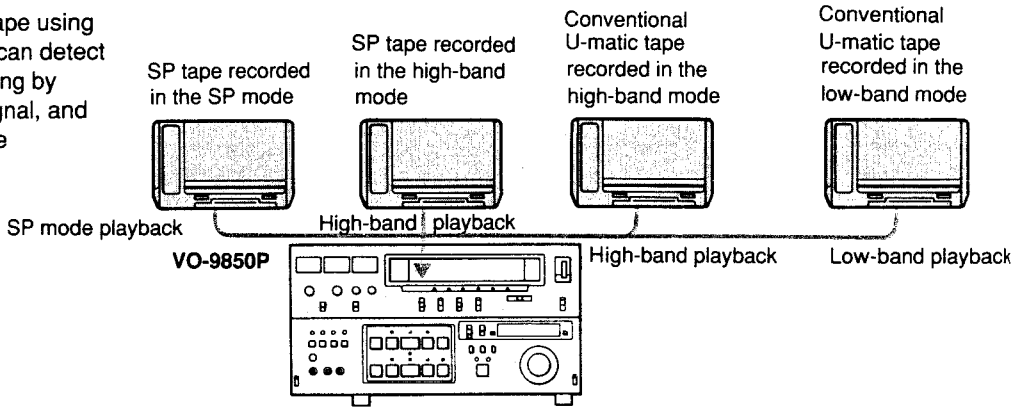
Recording the signal connected to the TV or VIDEO IN connector

When the recording is performed using the SP series cassette tape, the VTR senses the detection holes on the cassette shell, and automatically performs the recording in the SP mode. When a conventional KCA and KCS series U-matic tape is used, the recording is performed in the high-band mode.



Playback

When playing back the tape using the VO-9850P, the VTR can detect the mode used in recording by verifying the recorded signal, and plays back the tape in the appropriate mode.

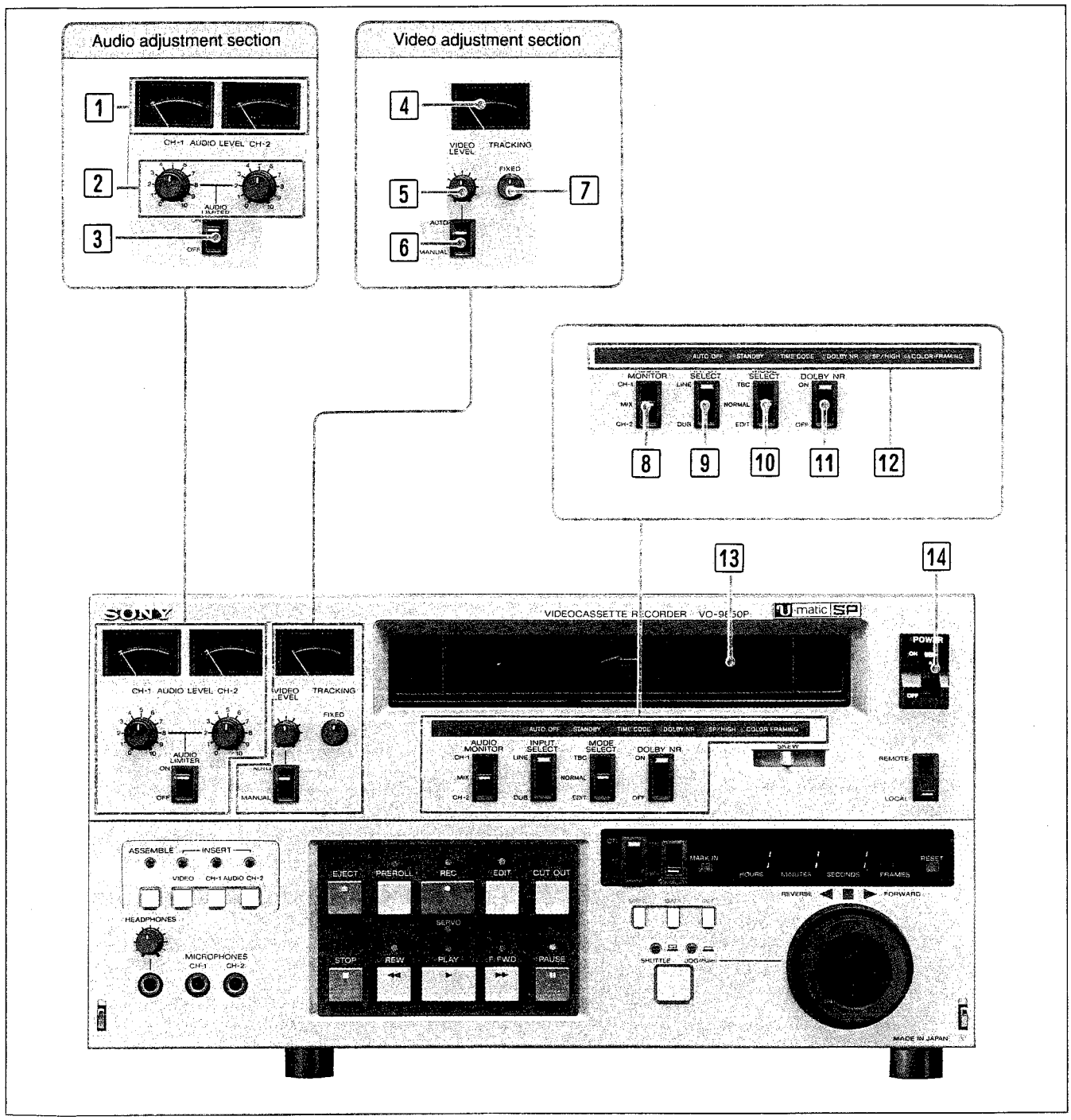

SP tape recorded in the SP mode
SP tape recorded in the high-band mode
Conventional U-matic tape recorded in the high-band mode
Conventional U-matic tape recorded in the low-band mode
SP mode playback
High-band playback
VO-9850P
High-band playback
Low-band playback

Notes

- The SP/HIGH lamp on the front panel lights when a tape recorded in the SP or high-band mode is played back.
- When the tape recorded with the VO-9850P is played back on the VTR other than the VO-9850P, the tapes recorded in the SP mode can be played back with the VTR which is adapted for the high-band mode, and vice versa.

Location and Function of Parts and Controls

Front Panel



Audio adjustment section

1 Audio level meters
Audio recording level is shown in recording and audio playback level in playback.

2 AUDIO LEVEL controls

3 AUDIO LIMITER switch

ON	The audio recording limiter circuit is activated to minimize sudden surges of input signals and perform recording with low sound distortion. Microphone recordings shall be performed with this setting.
OFF	The limiter circuit is deactivated, enabling a manual recording level adjustment.

Video adjustment section

[4] VIDEO LEVEL/TRACKING meter
This meter indicates the video recording level during recording and whether or not tracking is correct during playback.

[5] VIDEO LEVEL control
With the AUTO/MANUAL selector [6] set to MANUAL, turn this control to adjust video recording level so that the meter pointer swings within the blue zone.

[6] AUTO/MANUAL selector

AUTO	The video recording level will be adjusted automatically.
MANUAL	Set to this position to adjust the video recording level manually.

[7] TRACKING control
Normally set this control at the center FIXED position. Should noise, snow or streaks appear in a playback picture recorded on another machine, turn this control so that the VIDEO LEVEL/TRACKING meter [4] pointer deflects to the right as far as possible.
- Do not move this control from the center FIXED position while recording.

[8] AUDIO MONITOR switch
Select the sound to be monitored through headphones or a speaker of a video monitor.

[9] INPUT SELECT switch
This switch selects the signal to be recorded.

LINE	To record the signal from the VIDEO IN connector.
DUB	To record the signal from the DUB IN connector.

[10] MODE SELECT switch
This switch selects the sync mode according to the connected equipment or to the operation mode.

TBC	For playback with a time base corrector
NORMAL	For normal recording or playback
EDIT	For editing

- If the switch is set to TBC without connecting a time base corrector, the picture rolls in the search mode.
- For editing, be sure to set the MODE SELECT switch to EDIT. When the switch is set to the position other than EDIT, the editing does not begin.

[11] DOLBY NR (noise reduction) switch
When using an SP series tape for recording, set this switch to:

ON	For recording the sound with the Dolby NR system
OFF	For recording the sound without the Dolby NR system

- This switch has no effect in playback mode. The circuit is automatically switched by detecting whether the tape being played has been recorded with the Dolby NR system or not.
- The Dolby NR system is effective only for recording on SP series cassettes. This switch is not operative when recording on KCA and KCS cassettes.
- If the sound recorded with the Dolby NR system is played back on a conventional U-matic VTR (which is not equipped with the Dolby NR system), treble will be boosted.

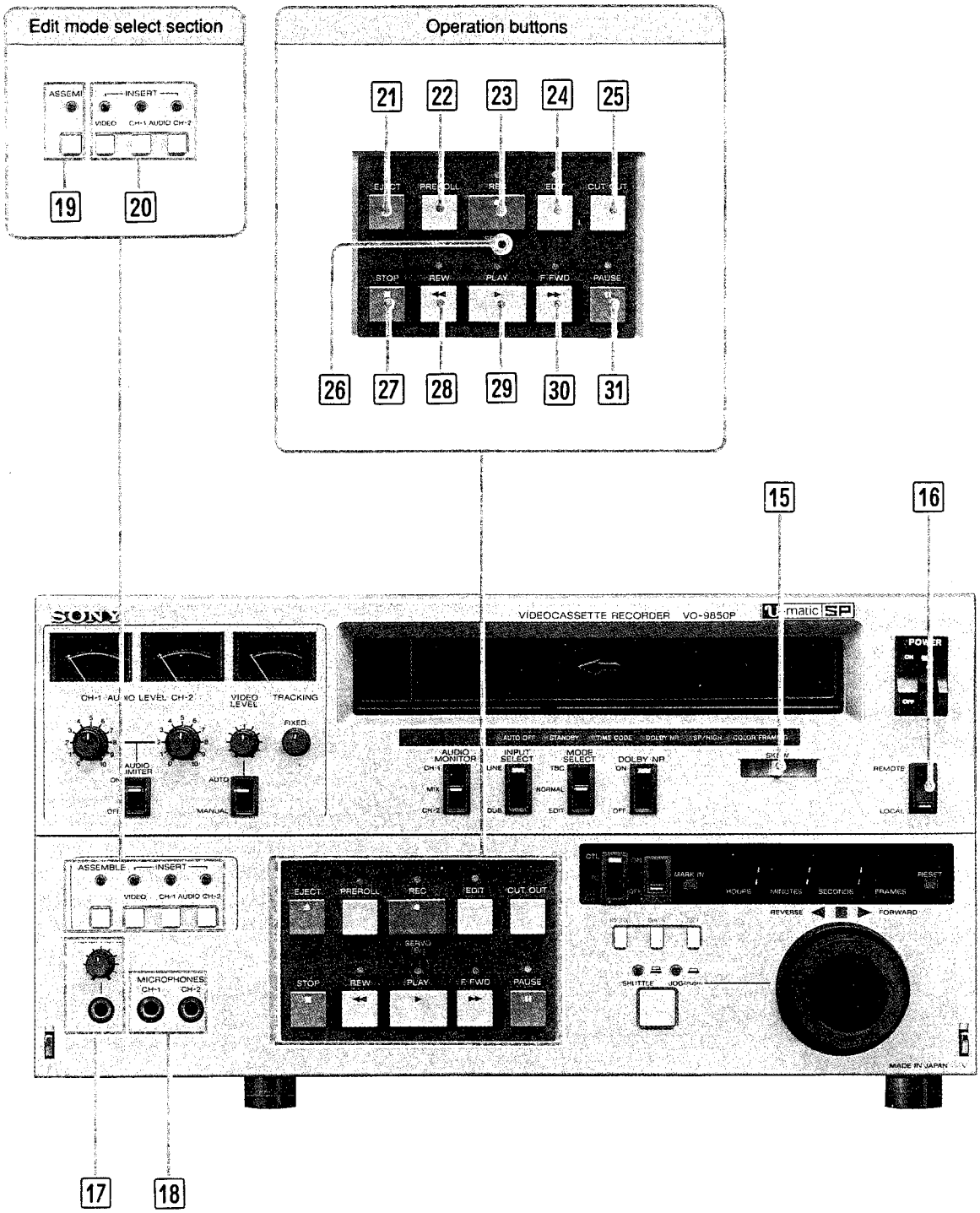
[12] Indicator section

AUTO OFF	Lights at power-on when moisture is condensed inside the unit. While this indicator is lit, a cassette cannot be loaded.
STANDBY	Lights while a tape is being threaded from or unthreaded to the cassette inside the unit.
TIME CODE	Lights when time code is being recorded, or when the tape on which time codes are recorded is played back.
DOLBY NR*	In recording: Lights when an SP series cassette is inserted with the DOLBY NR switch set at ON. In playback: Lights when a tape recorded with the Dolby NR system is played back.
SP/HIGH**	In recording: Lights when an SP series cassette is loaded. In playback: Lights when a tape recorded in the SP or high-band mode is played back.
COLOR FRAMING	Lights when the COLOR FRAMING switch on the rear panel is set to ON, and the color framing servo system functions during automatic editing or editing using the PREROLL button.

* When the power is turned on with the DOLBY NR switch set at ON, the DOLBY NR lamp lights up even if no cassette has been inserted.
** When the power is turned on, the SP/HIGH lamp lights up even if no cassette has been inserted.

[13] Cassette compartment

[14] POWER switch


Edit mode select section
ASSEMBLE
INSERT
VIDEO
CH-1 AUDIO CH-2
19
20
Operation buttons
21
22
23
24
25
EJECT
PREROLL
REC
EDIT
CUT OUT
SERVO
STOP
REW
PLAY
F FWD
PAUSE
26
27
28
29
30
31
15
16
SONY
VIDEOCASSETTE RECORDER VO-9850P
U-matic SP
CH-1 AUDIO LEVEL CH-2
VIDEO LEVEL
TRACKING
FIXED
AUDIO LIMITER
ON
OFF
AUTO
MANUAL
AUTO OFF
STANDBY
TIME CODE
DOLBY NR
SP/HIGH
COLOR FRAME
AUDIO MONITOR
CH-1
MIX
CH-2
INPUT SELECT
LINE
DUB
VIDEO
MODE SELECT
TBC
NORMAL
EDIT
DOLBY NR
ON
OFF
SKEW
POWER
REMOTE
LOCAL
ASSEMBLE
INSERT
VIDEO
CH-1 AUDIO CH-2
MICROPHONES
CH-1
CH-2
EJECT
PREROLL
REC
EDIT
CUT OUT
SERVO
STOP
REW
PLAY
F FWD
PAUSE
MARK IN
HOURS
MINUTES
SECONDS
FRAMES
RESET
REVERSE
FORWARD
SHUTTLE
JOG/CAUE
MADE IN JAPAN
17
18

[15] **SKEW lever**
Normally set this lever at the center position.
When "hooking" distortion appears in the upper part of a playback picture, slide this lever to the right or left to obtain a normal picture.
• Do not move this lever while recording.

[16] **REMOTE/LOCAL selector**
Use this selector to control this unit with the other equipment connected to the REMOTE -1(9P) connector on the rear panel.
The functions are controlled as follows:

REMOTE	Set to this position when you want this unit to be controlled by the unit connected to the REMOTE-1 (9P) connector (9-pin). With this selector set to REMOTE, none of the operation buttons for tape travel, except for the STOP and EJECT buttons, will function.
LOCAL	Set to this position to operate this unit alone.

[17] **HEADPHONES connector (stereo phone jack), HEADPHONES level control**

[18] **MICROPHONES CH-1 and CH-2 connectors (phone jacks)**

Edit mode select section

[19] **ASSEMBLE button and indicator**
Press for assemble editing. The indicator will light.

[20] **INSERT buttons and indicators**
These buttons select the signal(s) to be inserted when editing. The indicator(s) corresponding to the button(s) pressed will light.

VIDEO	To insert the video signal
AUDIO CH-1	To insert the sound on audio channel 1
AUDIO CH-2	To insert the sound on audio channel 2

• Two or more buttons can be pressed simultaneously.
To cancel the channel selected by one of these buttons, press the button again. The indicator will go out.
To change the mode from assemble to insert or vice versa, first cancel the previously selected mode by pressing the button again then press the appropriate buttons.

Operation buttons

[21] **EJECT button**
Press to eject the video cassette.

[22] **PREROLL button and indicator**
Press this button in pause mode and the tape rewinds for 5 seconds and stops in pause mode.

[23] **REC ● (record) button and indicator**
For recording, press this button simultaneously with the PLAY ► button.

[24] **EDIT button and indicator**
For editing, press this button simultaneously with the PLAY ► button. While this button is pressed, the E-E mode picture can be seen. (When INSERT mode is selected for editing, the signals selected with the INSERT buttons can be monitored in the E-E mode.)

[25] **CUT OUT button**
Press this button when assemble or insert editing is finished. The edit mode is canceled and the tape will continue to run in playback mode. When this button is pressed in record mode, the record mode is canceled, and when this button is pressed in pause mode after the preroll, the edit mode is canceled.

[26] **SERVO lamp**
With the PLAY ► button pressed, normally the drum and capstan servo-mechanisms will start working properly. This lamp lights when the servo-mechanisms are locked in a reference signal.

Note

The SERVO lamp blinks if the servo-mechanisms are not locked in during editing.

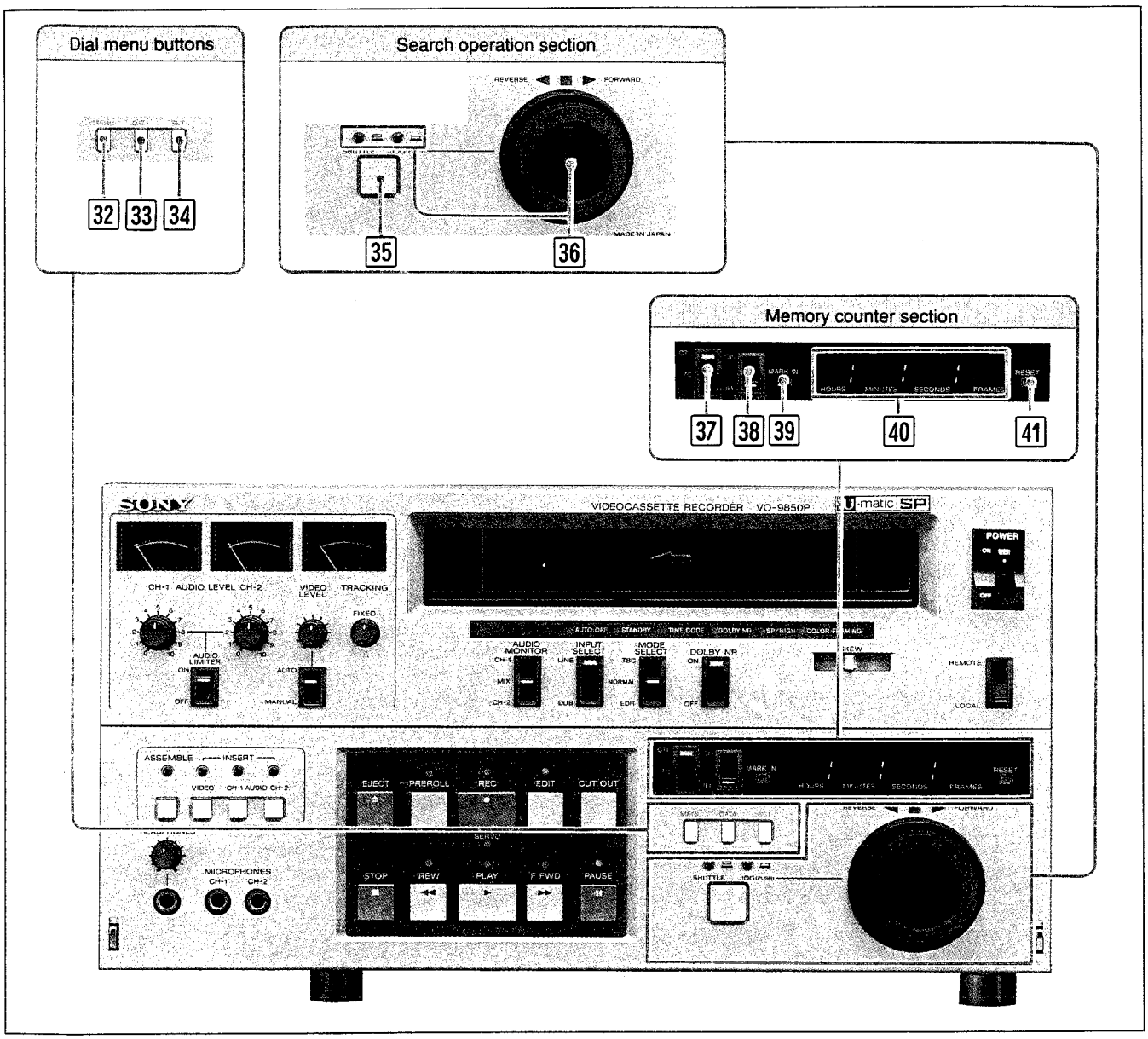
[27] **STOP ■ button**
Press to stop the operation of the unit. The E-E mode picture can be seen on the monitor screen.

[28] **REW ◄◄ (rewind) button and indicator**
Press to rewind the tape. The E-E mode picture can be seen on the monitor screen.

[29] **PLAY ► button and indicator**
Press to play the tape back. Simultaneously pressing this button with the REC ● button sets the unit in the record mode: simultaneously pressing it with the EDIT button sets the unit in the edit mode.

[30] **F FWD ►► (fast forward) button and indicator**
Press to advance the tape rapidly. The E-E mode picture can be seen on the monitor screen.

[31] **PAUSE ❚❚ button and indicator**
Press to stop the tape momentarily. To start the tape, press again. When this button is pressed during playback, a still picture will be obtained. If the PLAY ►, F FWD ►►, REW ◄◄ or search button is pressed during the pause mode, the pause mode will be released and the tape will run in the mode designated by the button pressed.



Dial menu buttons

The dial menu buttons [32], [33] and [34] are used only when the CTL/TC/DIAL MENU selector [37] is set to DIAL MENU.

[32] MENU button
While pressing this button, turn the search dial in jog mode to select the menu.

[33] DATA button
While pressing this button, turn the search dial in jog mode to set the data.

[34] SET button
Press this button to settle the data set by the DATA button.

Search operation section

[35] Search button
Press to put the unit in the search mode, and the search operation with the search dial in jog or shuttle mode will be possible.

[36] Search dial and SHUTTLE/JOG lamps
Functions as a search dial for quickly locating edit points or as a selector for the dial menu operation according to the setting of the CTL/TC/DIAL MENU selector [37].

Setting	Function
CTL or TC	Search for a scene
DIAL MENU	Dial menu operation

The details of the function are as follows:

Search for edit points
Set the CTL/TC/DIAL MENU selector to CTL or TC, and press the search button [35]. The search dial can make the tape run in jog or shuttle mode. Push in to change from the shuttle mode to the jog mode and push it in again to change back. The corresponding lamp lights to show the current mode. Rotate the dial clockwise to run the tape forward (the ► FORWARD lamp lights), and counterclockwise to run the tape in reverse (the REVERSE ◄ lamp lights).
When the tape stops, the ■ lamp lights.

SHUTTLE	Set the dial to one of 16 positions to run the tape at a speed from 1/30 to 8 times normal speed. A still picture is obtained at the center detent position.
JOG	The dial turns freely. The tape runs at a speed from 0 to 1 times normal speed while the dial is rotated. When the dial is stopped, a still picture is obtained.

Dial menu operation
Set the CTL/TC/DIAL MENU selector to DIAL MENU.
Rotate the dial while pressing the MENU button [32] or the DATA button [33] to set characters or numbers on the display.
See "Dial Menu Operation" for details.

Memory counter section

[37] CTL/TC/DIAL MENU selector
Selects what is displayed in the time counter display [40] as follows.

CTL	Displays time period of tape travel in hours, minutes, seconds and frames by counting CTL pulses.
TC	Displays time code.
DIAL MENU	The unit goes into the dial menu operation mode and the dial menu will be displayed. In this mode, any other functions are deactivated.

Notes

- You can put the VO-9850P in the dial menu operation mode with the REMOTE/LOCAL selector [16] set to LOCAL, only when a cassette is not inserted or when the unit is in the stop mode.
- The time code data is displayed only when the BKU-705 time code generator/reader or the BKU-704 time code reader is installed in the VO-9850P.

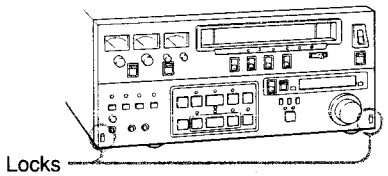
[38] MEMORY switch
When this switch is set to ON, the tape will automatically stop at the point where the MARK IN button was pressed in the rewind or search mode. The point where the tape stops may shift a little. If the MARK IN button has not been pressed, the tape will stop at the point where the time counter indicates "0:00:00:00" (when CTL is selected).
- During editing or when the REMOTE 1 (9P) connector is used, be sure to set this switch to OFF.

[39] MARK IN button
Press to memorize a particular point on the tape and the time indicator keeps indicating the memorized point while the button is pressed.
The memory function can be activated at any position of the MEMORY switch.

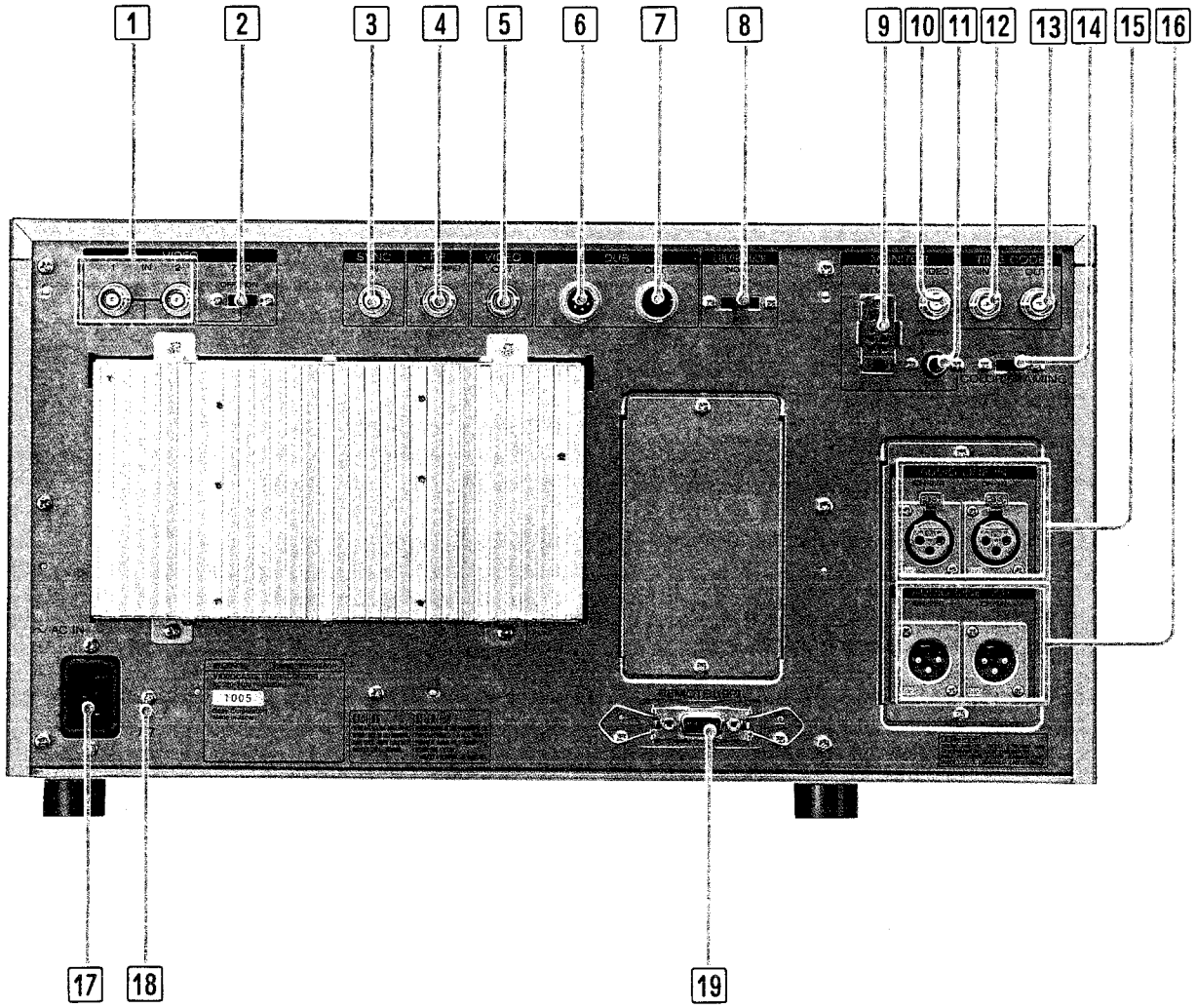
[40] Time counter display
Displays the item selected by the CTL/TC/DIAL MENU selector [37].

[41] RESET button
When the CTL signal is used to display the time period of the tape travel on the time counter display [40], press to reset to 0:00:00:00. The point memorized by the MARK IN button will be canceled.

Control panel positioning
The lower half of the control panel can be tilted upwards by 30°, 60° or 90° for convenience.
1 Push down the locks on the both sides simultaneously so that the lower half of the front panel comes to the front.
2 Tilt the panel up and lock it at the desired angle of 30°, 60° or 90°. Be sure to check that both sides are locked firmly.



Rear Panel



[1] **VIDEO IN (video input) connectors (BNC type)**
Supply a composite video signal to one of these connectors.
For a bridging connection, use either one for input and the other for output. In this case, be sure to set the 75 ohm termination switch [2] to OFF and terminate the trunk line end instead.

[2] **75 ohm termination switch**
Use to terminate the video signal supplied to the VIDEO IN connector [1].

ON	When one VIDEO IN connector is used for the incoming signal and the other is left open.
OFF	For a bridging connection (One VIDEO IN connector is used for the incoming signal but the other is used to send the incoming signal to another VTR.)

[3] **SYNC IN (sync signal input) connector (BNC type)**
Accepts an external sync signal to operate the unit in synchronization with an external device (time base corrector, etc.).

[4] **RF (OFF TAPE) output connector (BNC type)**
Supplies an RF (Y-FM) signal to a time base corrector in playback.

[5] **VIDEO OUT connector (BNC type)**

[6] **DUB IN (dubbing input) connector (7-pin)**
Use to input the video signal to be dubbed from a U-matic VTR. Connect to the dub out connector of the U-matic VTR using the 7-pin dubbing cable (optional).

[7] **DUB OUT (dubbing output) connector (7-pin)**
Use to supply the video signal to be dubbed to a U-matic VTR. Connect to the dub in connector of the U-matic VTR using the 7-pin dubbing cable (optional).

[8] **COLOR LOCK switch**
As a rule, set to NORM (normal). If the playback picture has no color or if the hue is abnormal, set the switch to the position marked [.].

[9] **MONITOR TV connector (8-pin connector)**
Accepts a video monitor having an 8-pin VTR connector. Both the MONITOR VIDEO, and MONITOR AUDIO connections can be replaced with a single cable connection here. In playback, the channel selected by the AUDIO MONITOR switch will be heard through the speaker on the video monitor.
- The data of the dial menu is superimposed on the video signal and output.

[10] **MONITOR VIDEO connector (BNC type)**
This outputs the video signal for monitoring. Connect to the video input connector of a color monitor. Information superimposed on a picture in the dial menu operation mode will also be output.

[11] **MONITOR AUDIO output connector (phono jack)**
Supplies an audio signal selected by the AUDIO MONITOR switch on the front panel.

[12] **TIME CODE IN connector (BNC type)**
Accepts the time code supplied from an external time code generator or another VTR.
When the BKU-705 time code generator/reader (optional) is installed in the VO-9850P, it can be locked with the time code supplied to this connector.
When the BKU-705 is not installed, the time code supplied to this connector can be recorded.

[13] **TIME CODE OUT connector (BNC type)**
During playback, the time code recorded on the tape is played back and output from here. When the time code is supplied to the TIME CODE IN connector, the supplied time code is output during recording.
When the BKU-705 time code generator/reader is installed, the time code generated by the BKU-705 is output during recording.

[14] **COLOR FRAMING switch**
Normally, set the switch to ON, and the color framing system functions during editing. At the OFF position, the color framing system does not function.

[15] **AUDIO LINE IN CH-1/L and CH-2/R connectors (XLR 3-pin, female)**

[16] **AUDIO LINE OUT CH-1/L and CH-2/R connectors (XLR 3-pin, male)**

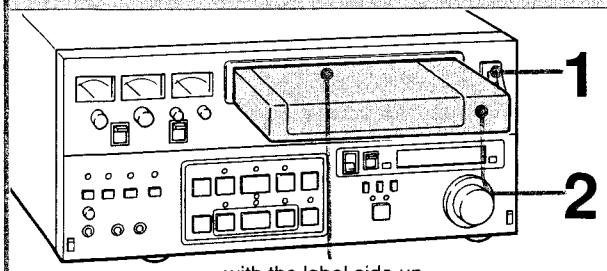
[17] **AC IN (power inlet)**
Plug in the supplied AC power cord to supply power to the VO-9850P.

[18] **Ground terminal**

[19] **REMOTE 1 (9P) connector (9-pin)**
Connect a Sony editing control unit such as an RM-450CE to perform an edit recording.
Use the 9-pin remote control cable (optional) to make the connection.

On Video Cassettes

To insert a cassette

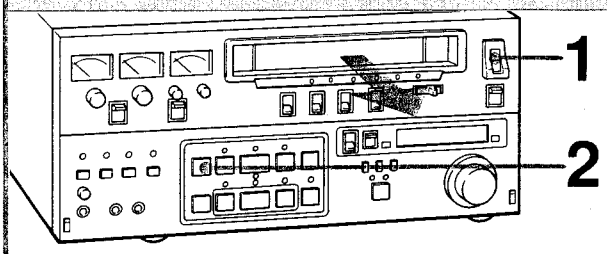


with the label side up

1 **Turn the power on.**

2 **Insert the cassette into the cassette compartment.**
The STANDBY lamp will light and the cassette will be automatically pulled in. When the cassette is completely pulled in, the lamp goes off.

To remove the cassette



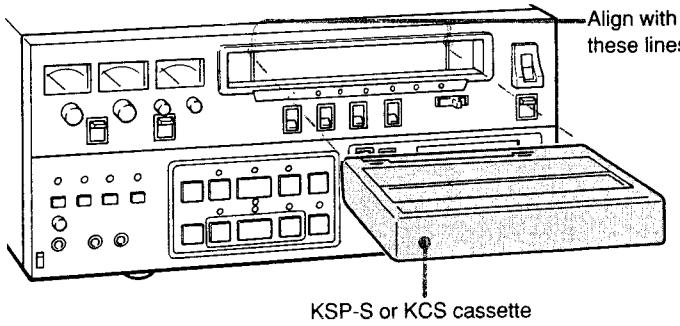
1 **Make sure that the power is turned on.**

2 **Press the EJECT ⏏ button.**
The STANDBY lamp once lights up. When the lamp goes off, the cassette will be ejected.

Caution
Do not put your hand into the cassette compartment when removing a cassette.

To insert a small-size (KSP-S or KCS) cassette

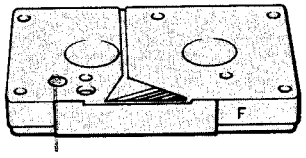
Insert the cassette into the center of the cassette compartment, aligning it with the dotted lines on the compartment lid.



Notes on cassette insertion
- Be sure to insert the cassette straight into the entrance of the compartment.
- Check the cassette sides and be sure to insert the cassette correctly with the label side up.
- The labels on the cassette should be firmly attached. If they peel off an inserted cassette, you might not be able to remove the cassette.

If the STANDBY lamp remains lit after inserting cassette
- Turn the POWER switch off and then turn it on again.
- If the STANDBY lamp still remains lit, eject the inserted cassette. If the cassette cannot be ejected or if the STANDBY lamp still remains lit after the cassette is ejected, then consult your nearest Sony service facility.

About the red button
When re-recording on a recorded tape, the pre-recorded material will be automatically erased. If you want to safeguard the material recorded on a tape, remove the red button on the bottom of the cassette. With the red button removed, it cannot be recorded even if the REC button is pressed. Accidental erasure is now impossible. When recording, check that the red button is in the place. If a cassette without a red button is inserted, an E-E mode picture (see page 22) does not appear on the monitor screen.



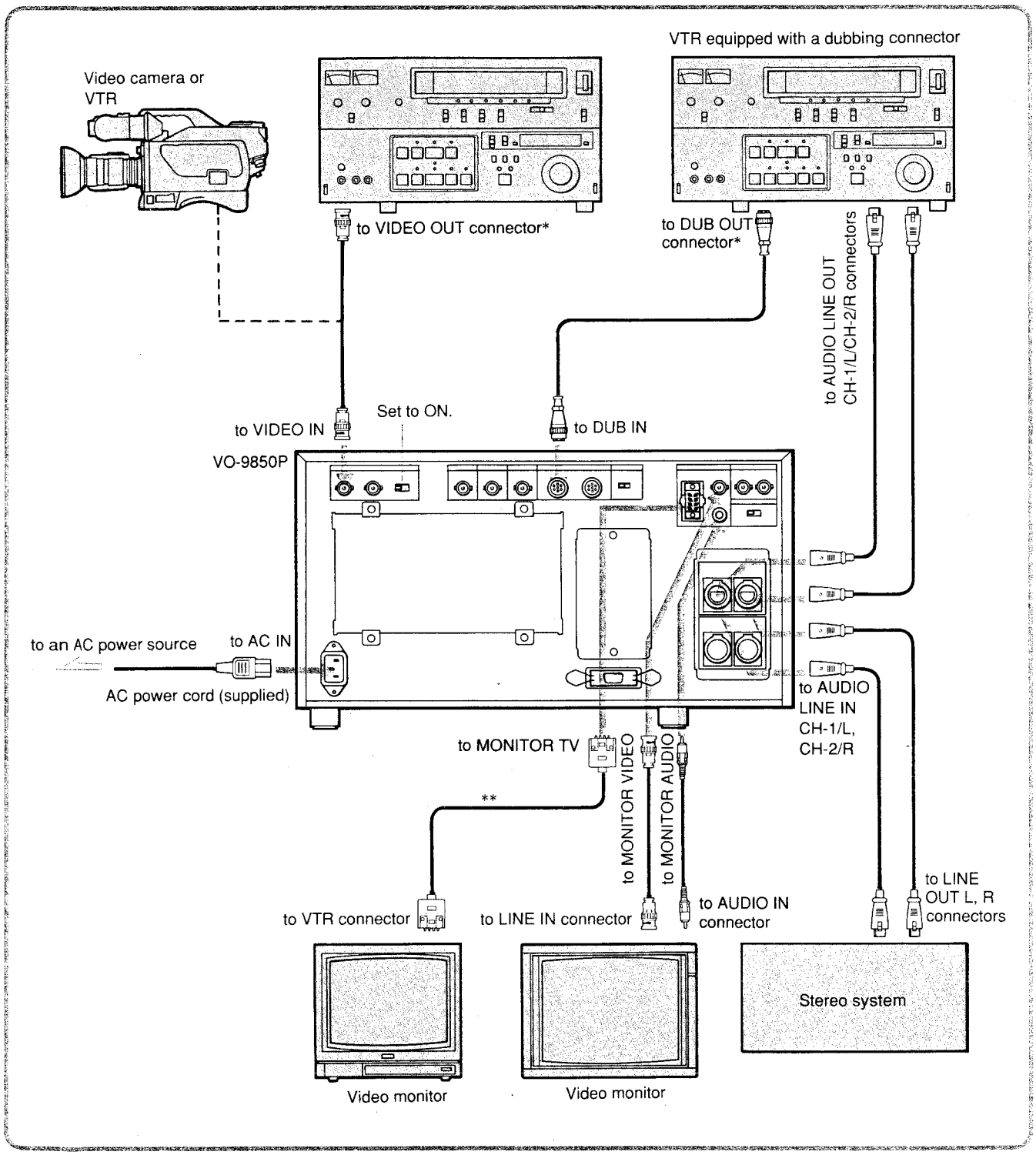
Red button

Handling and storage of cassettes
- Do not store a cassette in a place subject to direct sunlight, high humidity or excessive dust, or near heat sources, air ducts or magnetic field.
- After use, rewind the tape evenly on the supply reel to avoid damaging the tape.
- Store the cassette in a case and keep it in a vertical position.
- Do not fall the cassette and avoid subjecting it to mechanical shock.

RECORDING AND PLAYBACK

Connections

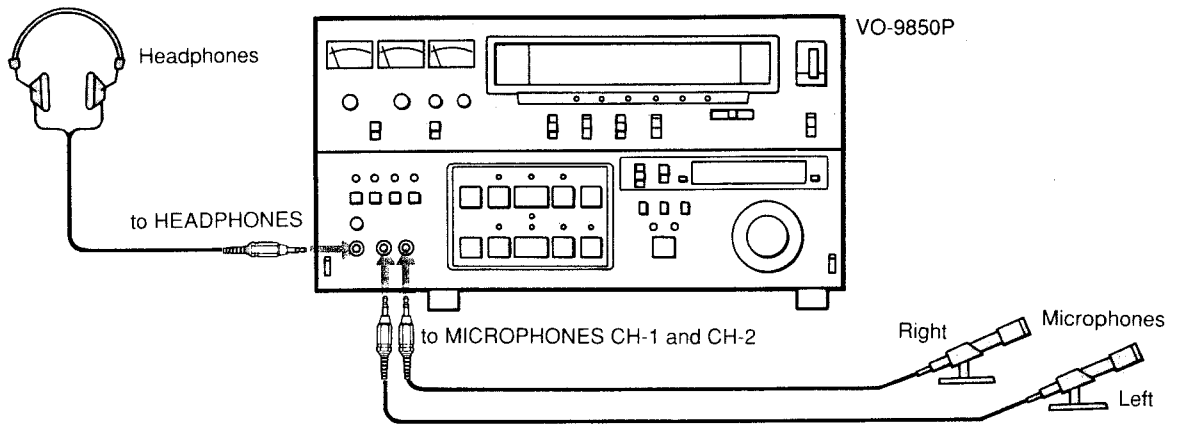
Connections for Recording



* When a VTR which is not equipped with the DUB connector, connect it to the VIDEO IN connector on the VO-9850P using a cable with BNC connectors.

** Use a VMC-3P, VMC-5P or VMC-10P monitor connecting cable.

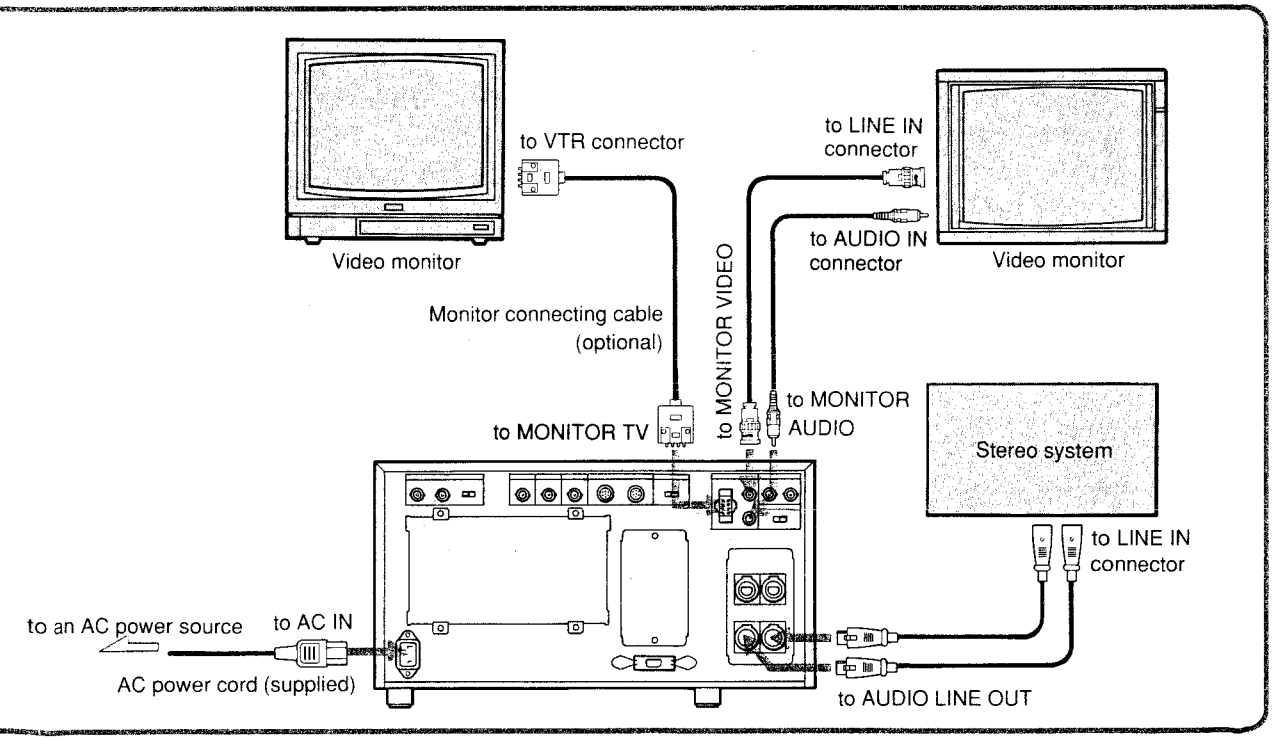
Connections of Headphones and Microphones



Note

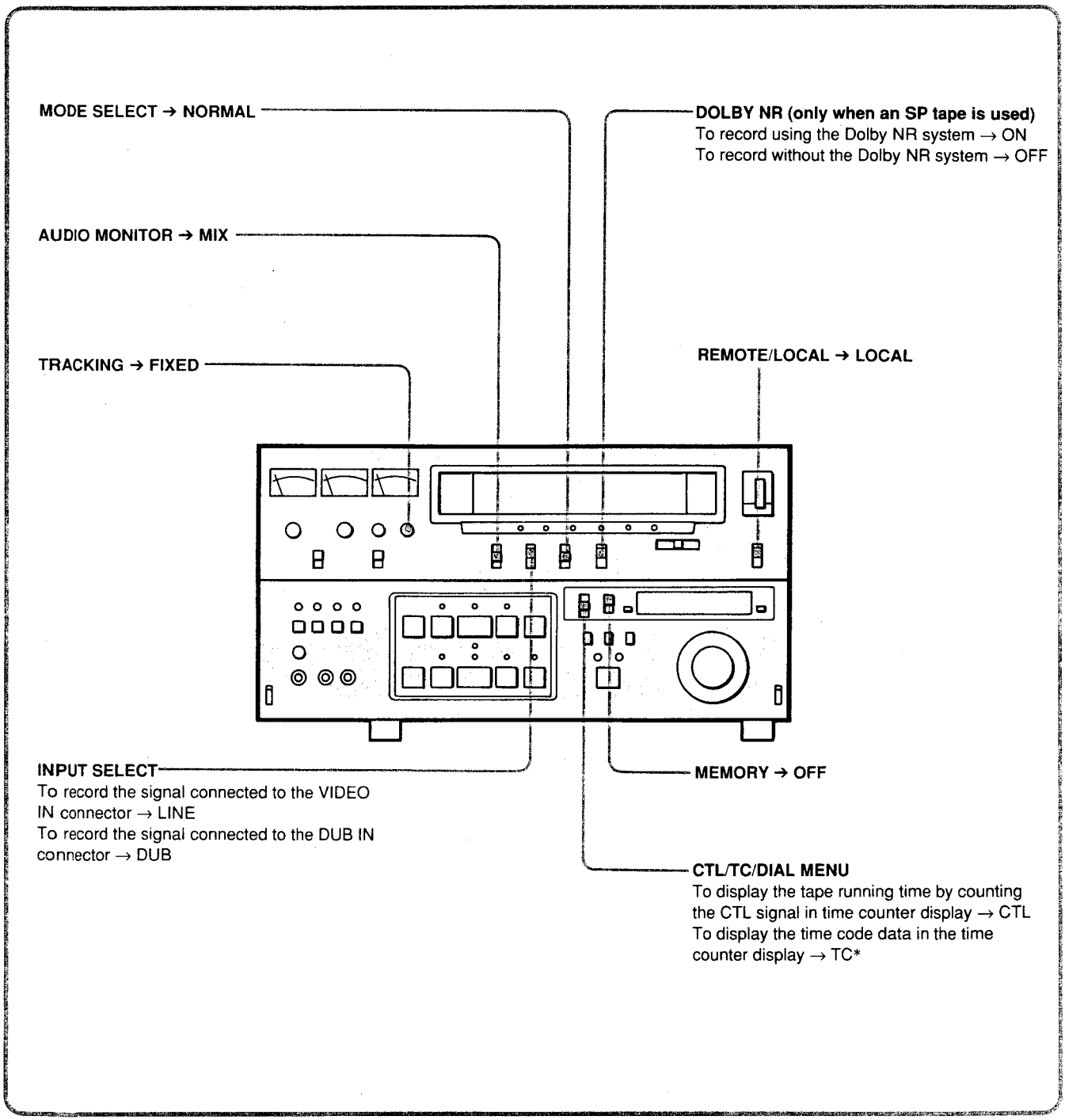
When the microphones are connected, the signals connected to the AUDIO LINE IN connectors on the rear panel are automatically cut off, and cannot be recorded.

Connections for Playback



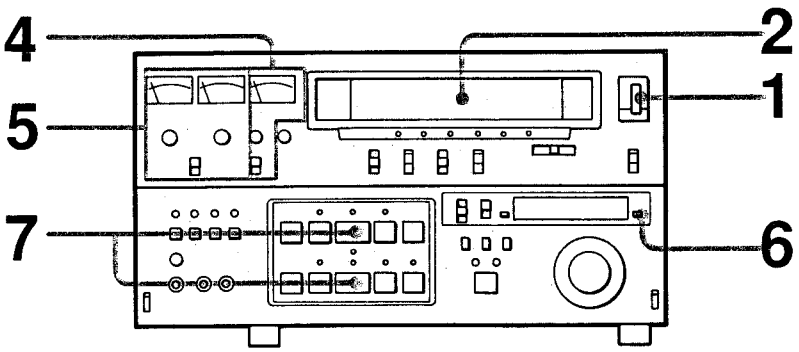
Preparation

After connecting the equipment to be used, set the switches and control as shown below.


MODE SELECT → NORMAL
DOLBY NR (only when an SP tape is used)
To record using the Dolby NR system → ON
To record without the Dolby NR system → OFF
AUDIO MONITOR → MIX
TRACKING → FIXED
REMOTE/LOCAL → LOCAL
INPUT SELECT
To record the signal connected to the VIDEO IN connector → LINE
To record the signal connected to the DUB IN connector → DUB
MEMORY → OFF
CTL/TC/DIAL MENU
To display the tape running time by counting the CTL signal in time counter display → CTL
To display the time code data in the time counter display → TC*

* To display the time code, an optional BKU-705 time code generator/reader or an optional BKU-704 time code reader is necessary.

Recording



1 **Turn the power of the VO-9850P and the connected equipment on.**

2 **Insert a cassette.**

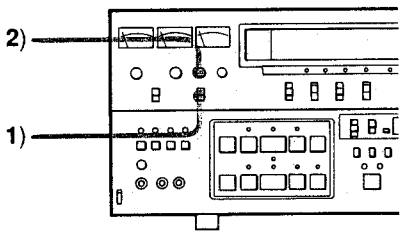
3 **Prepare the program to be recorded.**
To record the signal from the video camera:
Adjust the camera.
To record the playback signal from the other VTR: Set the VTR used for playback in playback mode.
The picture in E-E mode appears on the monitor screen.

4 **Adjust the video recording level.**

For automatic adjustment:

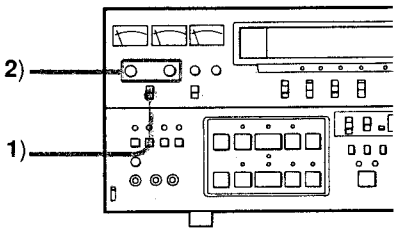
Set the AUTO/MANUAL selector to AUTO.
(The video recording level is automatically adjusted to the optimum level.)

For manual adjustment:



1) Set the AUTO/MANUAL selector to MANUAL.
2) Turn the VIDEO LEVEL controls so that the meter pointer stays in the blue zone on the scale.

5 **Adjust the audio recording level.**



1) Set the AUDIO LIMITER switch to OFF.
2) Turn the AUDIO LEVEL controls so that the meter pointers swings to "0" at their maximum deflection.
- The CH-1 control adjusts the level of the audio channel 1 (left), and the CH-2 control adjusts the level of the audio channel 2 (right).
- When recording a program which contains sharp peaks such as the signal picked up by a microphone, set the AUDIO LIMITER switch to ON.

6 **Press the RESET button when the CTL/TC/DIAL MENU selector is set to CTL.**
The value on the time counter display becomes "0:00:00:00".

7 **Press the REC ● and PLAY ► buttons simultaneously.**
Recording will begin.

When the recording is finished

Press the STOP ■ button.

If the recording is done to the end of the tape
The tape automatically rewinds to the beginning, and stops.

Note on recording

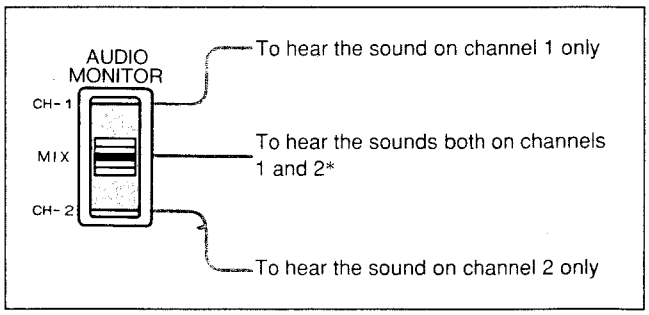
Do not move the SKEW lever while recording.

Regarding a cassette
Be sure to check that the red button is in place on the cassette before inserting it in the VTR. If the cassette without the button is inserted, the recording mode cannot be obtained.

To stop the tape momentarily
Press the PAUSE ❚❚ button.
To resume recording, press the PAUSE ❚❚ button again.

Long pause mode
If the pause mode continues for 8 minutes, the tape around the head drum automatically slackens to protect the video head and the tape. This is called "long pause mode".
To release the long pause mode, press the PAUSE ❚❚ button.

To monitor the sound being recorded
While recording, the sound being recorded can be heard through headphones, audio equipment or a video monitor's speaker. When using headphones or equipment connected to the MONITOR AUDIO connector or the TV connector, set the AUDIO MONITOR switch as follows.

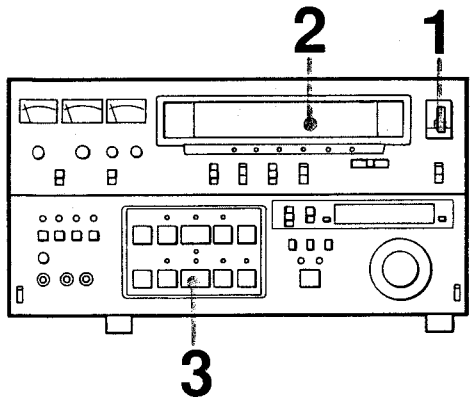

AUDIO MONITOR
CH-1
MIX
CH-2
To hear the sound on channel 1 only
To hear the sounds both on channels 1 and 2*
To hear the sound on channel 2 only

* When stereo headphones are used, the sound of channel 1 will be heard from the left unit and the sound of channel 2 from the right unit. When a monitor speaker connected to the MONITOR AUDIO or TV connector is used, mixing sound of both channels 1 and 2 will be heard.
- The sound from AUDIO LINE OUT CH-1/L and CH-2/R connectors are not affected by the setting of the AUDIO MONITOR switch. The CH-1/L connector always outputs the sound on channel 1 and the CH-2/R connector outputs the sound on channel 2.
- The sound volume of the headphones can be adjusted by the HEADPHONES level control.

E-E (Electric to Electric) mode
An input video signal which has passed through the amplifier in the recorder, is displayed on the monitor screen. This is the E-E mode picture, permitting the input signal to be checked on the monitor screen.
The unit automatically enters the E-E mode when it is set in the stop, F FWD or REW mode.

Playback

Operation



1 **Turn the power of the VO-9850P and the connected equipment on.**

2 **Insert the cassette to be played back.**

3 **Press the PLAY ► button.** Playback will begin.

To stop playback

Press the STOP ■ button.

When the tape is played back to the end
It automatically rewinds to the beginning and then stops.

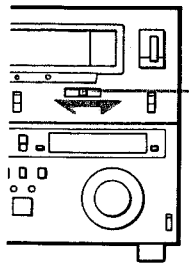
To stop the tape momentarily
Press the PAUSE ❚❚ button. The tape stops and a still picture appears on the monitor screen. The still picture is a clear one having no guardband noise.
To resume playback, press the PAUSE ❚❚ button again or press the PLAY ► button.

- If the pause mode continues for 8 minutes, the recorder automatically enters the long pause mode, and the still picture will disappear.

Note on the MODE SELECT switch
If the MODE SELECT switch is set to TBC without connecting a time base corrector, the playback picture rolls.

Adjusting a Playback Picture

If a hooking distortion appears in the upper part of the picture

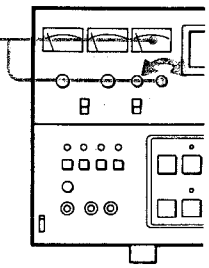


Move the SKEW lever slowly to the right or left until a normal picture is obtained.

- When the playback of this particular tape is finished, be sure to return the SKEW lever to the center position.
- The SKEW lever automatically returns to the center position when the recorder enters the record mode.

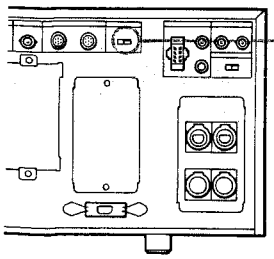
If snow or streaks appear on the picture

Slowly turn the TRACKING control clockwise or counterclockwise until the best possible picture is obtained.



- When the playback of this particular tape is finished, be sure to return the TRACKING control to the center FIXED position.

If the picture loses its color or does not maintain correct hues



Set the COLOR LOCK switch on the rear to the position marked [•].

- When the playback of this particular tape is finished, be sure to return the COLOR LOCK switch to the NORM position.

Search Operation

A desired portion can be quickly located with the search dial. There are two modes of search operation, shuttle mode and jog mode. Every time the search dial is pressed, shuttle mode and jog mode are changed alternately, and a corresponding lamp, SHUTTLE or JOG, lights.

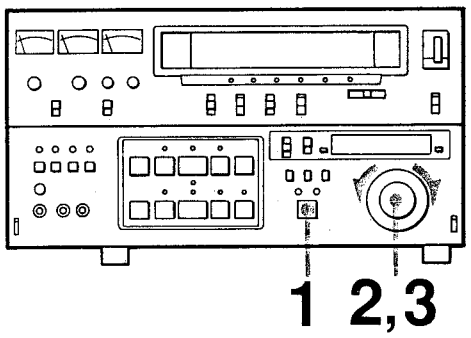
Shuttle mode

In the shuttle mode, the tape playback speed depends on the position of the dial. The tape runs at a speed from 1/30 to 8 times normal speed. When the dial is turned fully clockwise or counterclockwise, the speed of 8 times normal speed is obtained. Use this mode to search for a desired position approximately.

Jog mode

In the jog mode, the tape playback speed depends on the rotating speed of the search dial. The tape runs at a speed from 0 to 1 time normal speed. Use this mode to search for a desired position precisely.

Operation



1 **Press the search button to enter the search mode. The SHUTTLE or JOG lamp lights.**

- To change the shuttle or jog mode, press the search dial.

2 **Turn the search dial.**

When the dial is turned clockwise, the tape runs in the forward direction, and the ► FORWARD lamp lights.

When the dial is turned counterclockwise, the tape runs in the reverse direction, and the REVERSE ◄ lamp lights.

3 **Return the dial to the center position at the desired point in shuttle mode, or stop the dial rotation in jog mode.**

The tape stops momentarily, the ■ lamp lights, and a still picture is obtained.

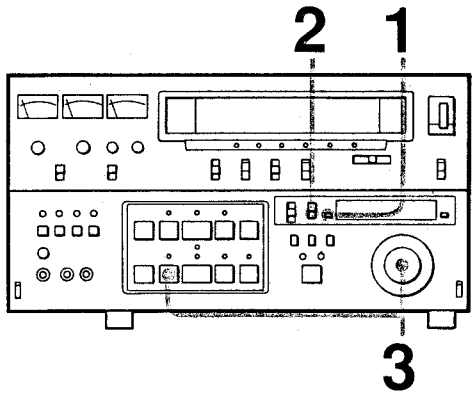
To terminate the search mode

Press one of the PLAY ►, REW ◄◄, F FWD ►►, or STOP ■ button.

Note

Guardband noise appears on the playback picture with a speed other than the normal speed because the servo system is not locked during search operation.

To Locate a Desired Point Quickly



1 **Press the MARK IN button at a desired point during recording or playback.**

2 **Set the MEMORY switch to ON.**

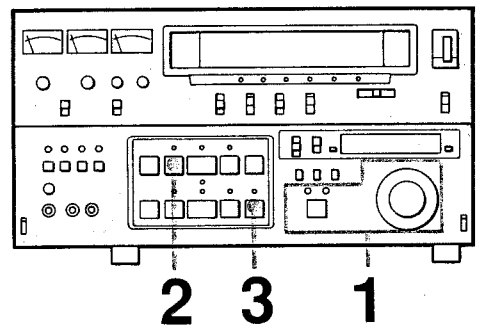
3 **Press the REW ◀◀ button, or turn the search dial to rewind the tape.**
The tape will stop near the point where the MARK IN button was pressed.
- When the tape stops while running in the search mode, a still picture can be seen.

Note

The searched point may differ from the memorized point by up to a few seconds.

Playback Using the PREROLL Button

Using the PREROLL button, you can easily start a playback at a desired time.



1 **Search for a point to start the playback, and stop the tape momentarily.**
- Use the search dial for quick and exact search. (Refer to "Search Operation")

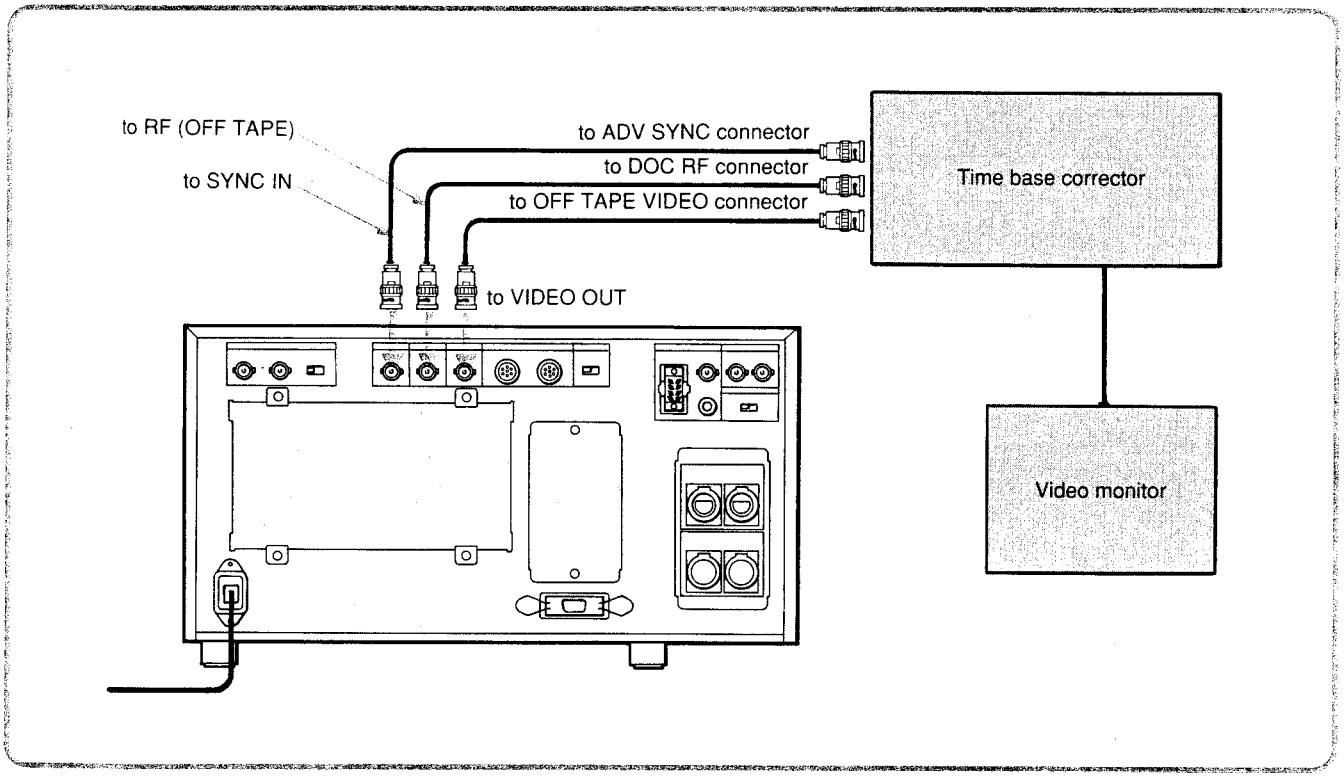
2 **Press the PREROLL button.**
The tape is rewound by 5 seconds, and stops in pause mode.

3 **Press the PAUSE ❚❚ button exactly 5 seconds before you want playback to start.**
The tape starts running, and the tape transportation will be stable at a desired time.

- Only one point can be memorized using the MARK IN button. If the button is pressed several times, only the last point will be searched for.
- If the MARK IN button is pressed at a desired point in fast forward or rewind mode, the point can be searched for.
- The memory of the MARK IN button is cancelled when the power is turned off, or the RESET button is pressed.
- When the memorized point is cancelled or when no point is memorized, the tape stops near the position where the time counter display shows "0:00:00:00" in CTL mode when the tape is rewound by the REW ◀◀ button or with the search dial.

Playback Using a Time Base Corrector

The best possible playback picture can be obtained when a time base corrector is used.



- When a time base corrector is used for playback, be sure to set the MODE SELECT switch to TBC.
- For details on the operation of the time base corrector, refer to the instruction manual furnished with it.

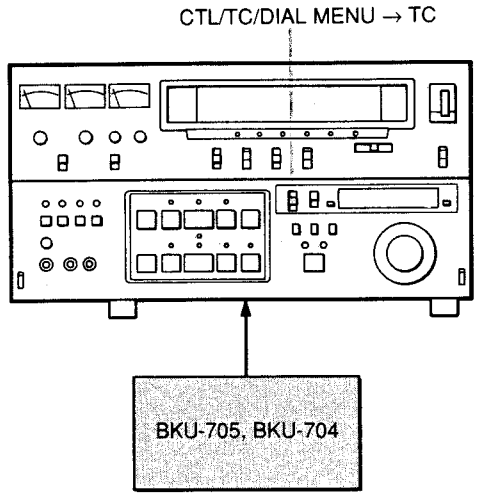
Sync system

The VO-9850P can operate with an external sync system when an video signal is input to the VIDEO IN or DUB IN connector or an external sync signal to the SYNC IN connector. When no external signal is input, it can operate with the internal sync system synchronizing with the sync signal generated by the built-in sync signal generator.

The reference signal is changed depending upon the setting of the MODE SELECT switch, the input signals and the VTR operation mode.

VTR operation mode		Recording	Playback	
Setting of MODE SELECT switch / Input signal		TBC, NORMAL, EDIT	EDIT	TBC, NORMAL
Video signal	External sync signal			
Yes	Yes	Video	Video	External sync
Yes	No	Video	Video	Video
No	Yes	External sync		
No	No	Internal sync		

Recording and Playback of Time Code



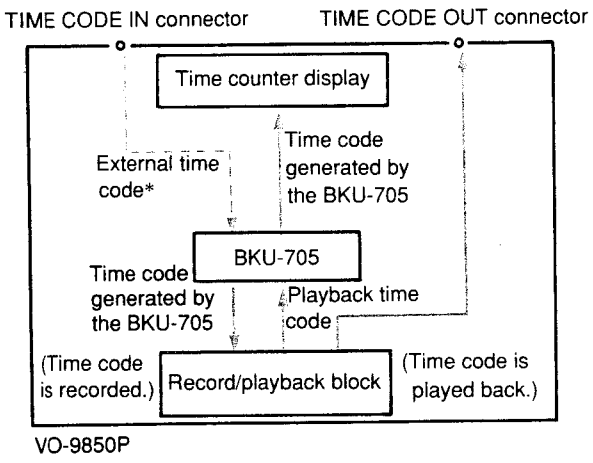
When a BKU-705 time code generator/reader (optional) is installed in the VO-9850P, recording the time code generated in the BKU-705 and displaying the time code on the time counter display will be possible. When a BKU-704 time code reader is installed, only displaying the time code will be possible.
To display the time code on the time counter display, set the CTL/TC/DIAL MENU selector to TC.

- For details on the operation of the BKU-705 or BKU-704, refer to the instruction manual furnished with it.

Note

To install and remove the BKU-705 and BKU-704, consult your Sony dealer.

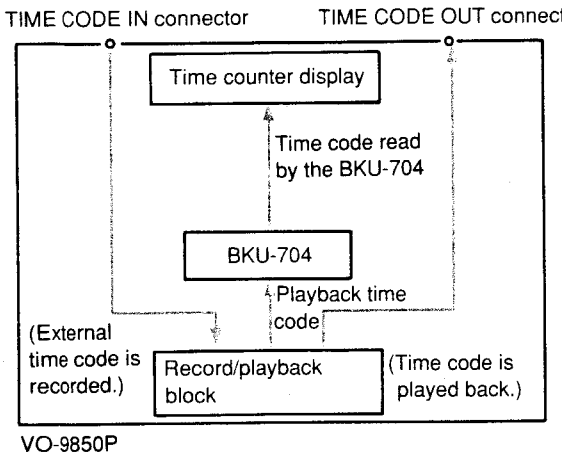
When a BKU-705 time code generator/reader is installed



* The BKU-705 can be locked with the external time code.

- Time code generated by the BKU-705 can be recorded.
- Time code recorded on the tape can be read and displayed on the time counter display.
- Editing controlled by the equipment connected to the REMOTE 1 (9P) connector can be executed using the time code.

When a BKU-704 time code reader is installed

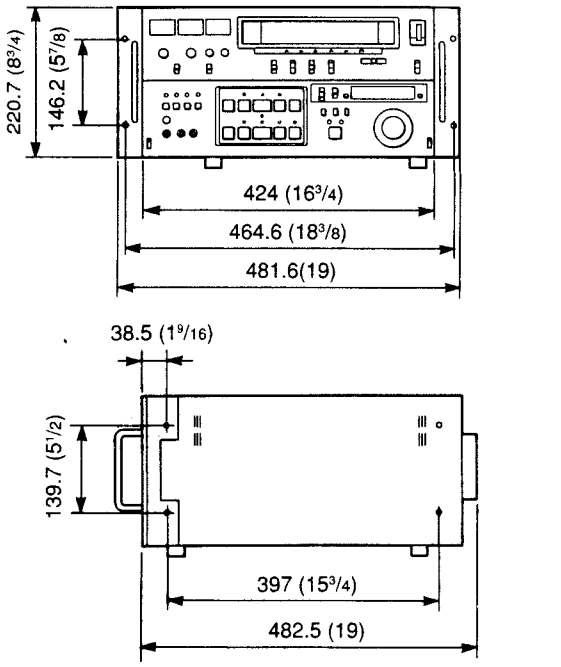


- Time code recorded on the tape can be read and displayed on the time counter display.
- Editing controlled by the equipment connected to the REMOTE 1 (9P) connector can be executed using the time code. (Only when the unit is used for the player.)

When the BKU-705 or the BKU-704 is not installed

Playback time code is output from the TIME CODE OUT connector.
If external time code is connected to the TIME CODE IN connector, the input time code can be recorded. However, the time code recording using the BKU-705 is recommended to avoid the signal degradation to record a playback time code from another VTR.

Rack Mounting



Unit: mm (inches)

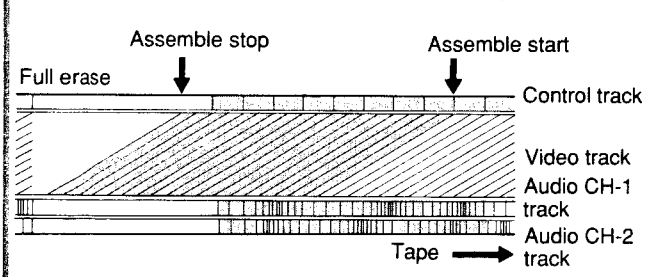
The VO-9850P can be mounted into a standard 19-inch rack. When your unit is to be mounted in a rack, consult your Sony dealer.

Editing

Editing Modes

Editing — tailoring recorded material into scenes, arranging these scenes in the appropriate order, adding sound effects, etc. — is an essential process in making a video program. In the electronic editing process, the tape on the player is edited and the result recorded on the recorder while both tapes on the recorder and the player are running.
There are two kinds of electronic editing: assemble editing and insert editing.

Assemble editing

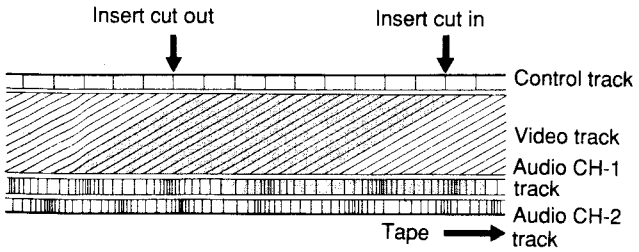


The video and audio signals are edited simultaneously. The control signals are also edited at the same time so that you can edit the scenes on a new tape as easy as possible.

Note

Because at the cut-out point the erased portion is triangular, the picture will be unstable at that point when assemble editing is used to add a new scene to the recorded tape.

Insert editing



The video, audio channel 1 and audio channel 2 can be edited independently or simultaneously. In the insert editing, the signals are edited in reference to CTL signal previously recorded on the tape.
Insert editing is recommended in the following cases:
— for inserting new scenes on a recorded tape.
— for adding the sound effects or commentary onto a tape which already has the video signals recorded on it.
— for adding video signals onto a tape which already audio signals recorded on it.

Note

CTL signal must be recorded continuously before insert editing.

Note

Continuity of the time code is broken at edit points when a tape is edited in the assemble mode. To make a tape which has the continuous time code, record the time code and CTL signal on the tape before editing and insert the video and audio signals on the tape afterward.

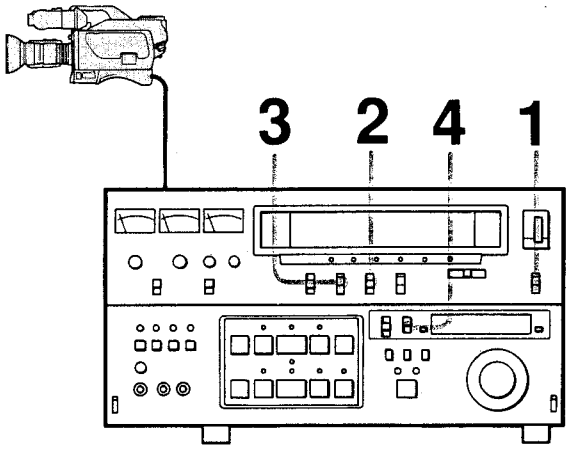
Editing with the PREROLL Button

The signals from a camera or another videocassette recorder can be edited easily and smoothly by using the PREROLL button.

- When editing using the PREROLL button, the CTL signal should be recorded for at least 5 seconds before the edit-in point.

Editing a Camera Picture

Preparation



1 Set the REMOTE/LOCAL selector to LOCAL.

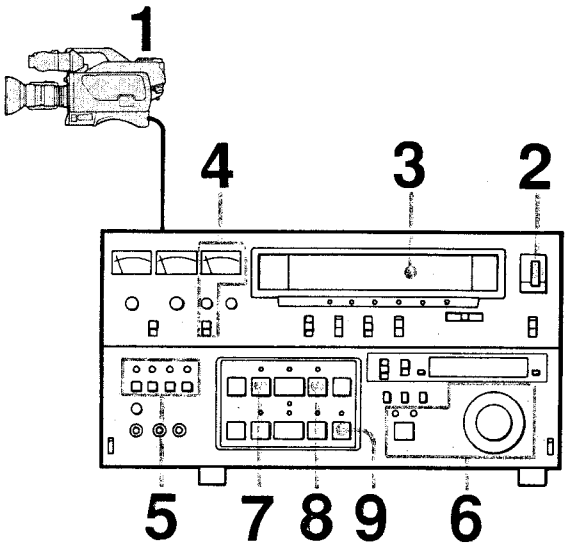
2 Set the MODE SELECT switch to EDIT.

3 Set the INPUT SELECT switch to LINE.

4 Set the MEMORY switch to OFF.

5 Normally, set the COLOR FRAMING switch on the rear panel to ON.

Operation



1 **Turn the power of the camera on, and adjust the camera.**

2 **Turn the power of the VO-9850P on.**

3 **Insert a cassette.**

4 **Adjust the video recording level.**

5 **Decide the edit mode.**

6 **Play the tape back, and decide the edit-in point (the point at which the recording of the camera picture is to begin), and stop the tape in pause mode.**
- A desired point can be quickly searched for with the search dial. (Refer to "Search Operation".)

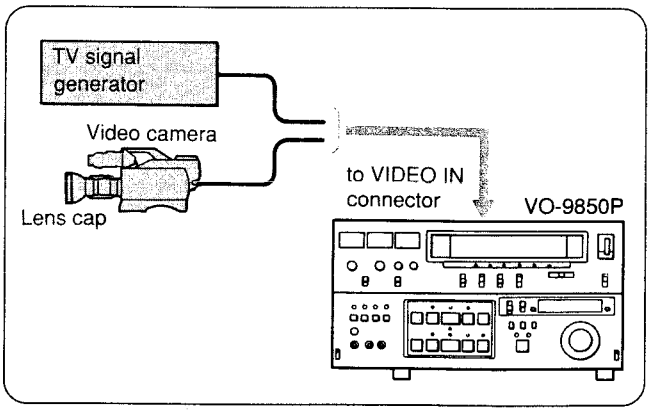
7 **Press the PREROLL button.**

8 **Press the EDIT button.**

9 **Press the PAUSE ❚❚ button.**
The tape is played back for 5 seconds, and the signal picked up by the camera starts to be recorded from the edit-in point.

To stop editing
Press the CUT OUT button.

Recording the CTL signal
CTL signal is usually recorded together with the video signals. However only CTL signal can be recorded in the following ways.
- Record the signal from a camera whose lens cap is in place.
- Record the black burst signal from a TV signal generator.

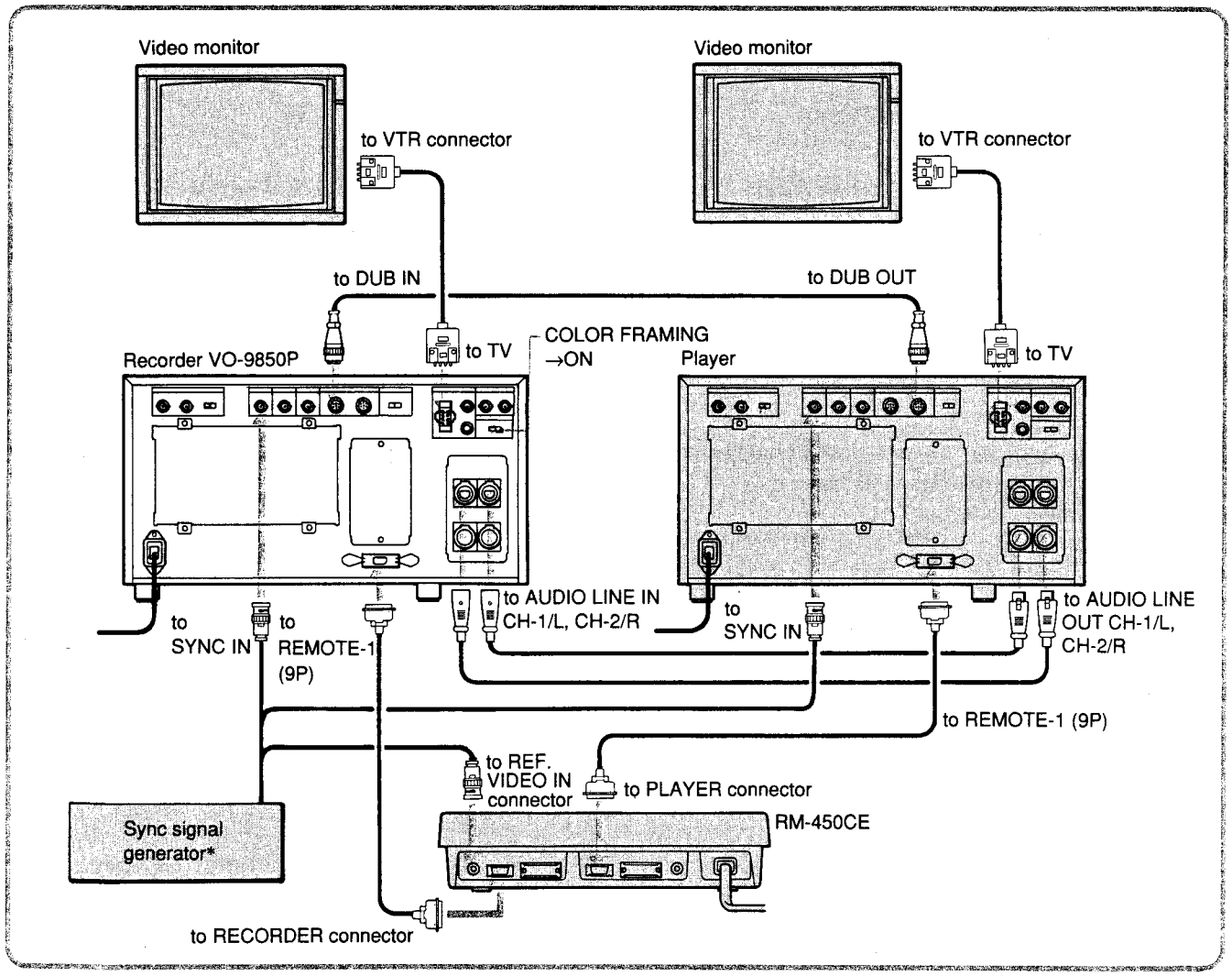


Automatic Editing – using the RM-450CE

When the RM-450CE automatic editing control unit is used with the VO-9850P, accurate and automatic tape-to-tape editing is possible. Once the edit-in (IN) and edit-out (OUT) points are memorized on the RM-450CE, the editing can be done simply by pressing the AUTO EDIT button.

- During search operation, the picture may become monochrome or roll vertically on some monitors. If this happens, slow down the playback speed.

Connections



Connecting the equipment with a 33-pin remote connector
When the equipment having a 33-pin remote connector such as an RM-440 editing control unit is used, a BKU-703 33P editing interface board (optional) is necessary. Attach the board on the rear panel, and connect the equipment.

- For attaching the BKU-703, consult your Sony dealer.

* For high quality editing, it is recommended to send a reference signal from a sync signal generator to the recorder, player and editing control unit.

Preparation

Preparation on the player

1 Turn the power on.

2 Set the REMOTE/LOCAL selector to REMOTE.

3 Insert a cassette to be played back.

4 Set the MODE SELECT switch to NORMAL.

Note

When a time base corrector is connected, set the switch to TBC.

5 Set the MEMORY switch to OFF.

6 Play the tape back, and adjust the TRACKING control and SKEW lever to obtain a clear picture if necessary.

Preparation on the recorder

1 Turn the power on.

2 Set the REMOTE/LOCAL selector to REMOTE.

3 Insert a cassette.

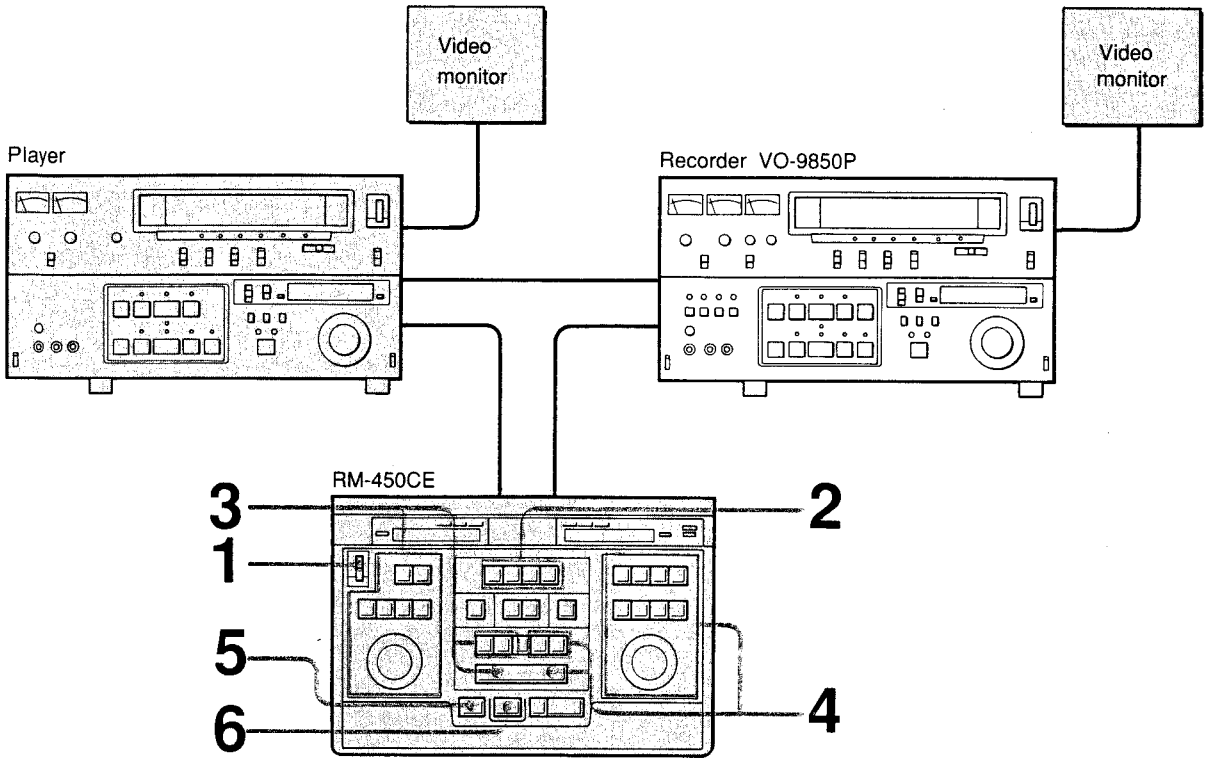
4 Set the MODE SELECT switch to EDIT.

5 Set the INPUT SELECT switch to DUB or LINE.

6 Set the MEMORY switch to OFF.

7 Adjust the video and audio recording levels while playing the tape back on the player.

Operation



1 **Turn the power of the RM-450CE on.**

2 **Decide the edit mode.**

3 **Decide the IN and OUT points on the player.**

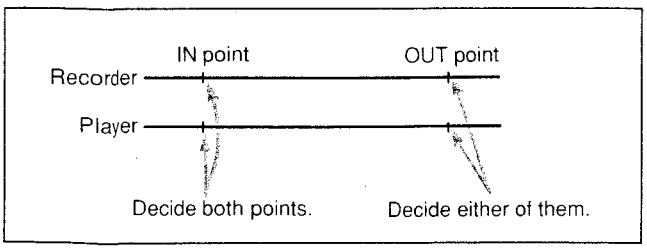
4 **Decide the IN point on the recorder.**

5 **Press the PREVIEW button to rehearse the edit.**

6 **Press the AUTO EDIT button to execute the edit.**

• For details on the operation of the RM-450CE, refer to the instruction manual furnished with the RM-450CE.

Regarding edit points
Among 4 edit points (IN and OUT points of the recorder and player) two IN points and either of the OUT points should be decided.



Modifying an edit point
To modify the decided edit point, use the TRIM button on the RM-450CE.

Confirming the executed edit
After editing, press the REVIEW button, and the part just edited is played back and is confirmed.

Note

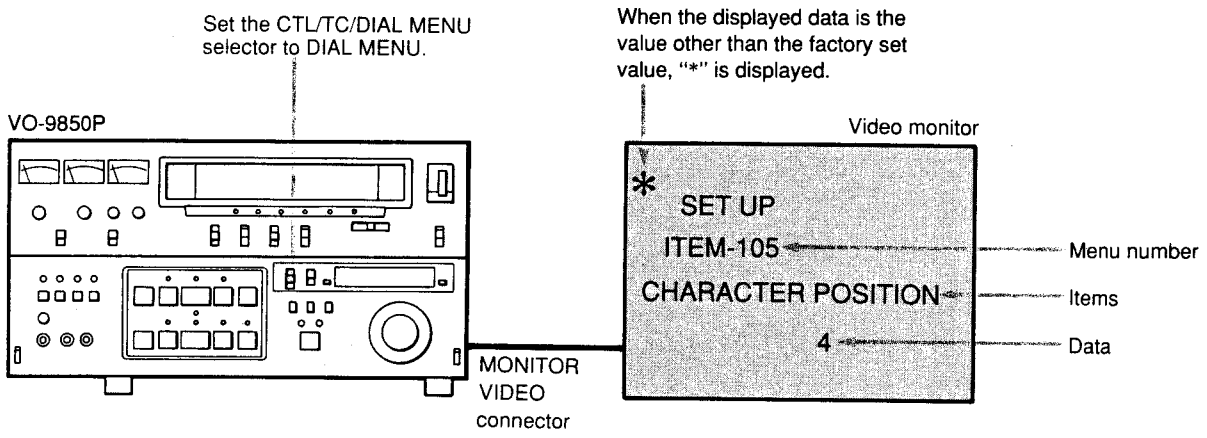
The VO-9850P is equipped with the 9-pin remote interface, but it is not recommended to use it as a recorder of A/B roll editing using a high-grade editing control unit such as the BVE-900, BVE-600.

Dial Menu Operation

Use the search dial to set the time code (when the optional BKU-705 time code generator/reader is installed), to set the data for tape transportation, or to change the data for editing.
The items and the contents are superimposed on the video signal supplied from the MONITOR VIDEO connector, and are displayed on the video monitor screen connected there when the CTL/TC/DIAL MENU selector is set to DIAL MENU. During dial menu operation, menu number and data are displayed on the time counter display on the front panel.

Note

To superimpose a menu on a video monitor screen, input a video signal to the unit and set the unit in the stop (E-E) mode.



Contents

There are two types of menus; basic and enhanced.
Normally, use only the basic functions.
For details on the enhanced functions, refer to page 42.

Basic functions

[ ] indicates the factory set data.

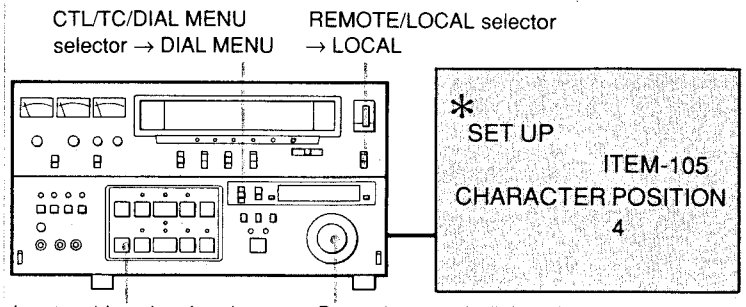
Menu No.	Items	Data		Contents
		On time counter display	On monitor screen	
101*	TIME CODE PRESET	[00000000] ~ 23595924	[TCG 00:00:00:00] ~ TCG 23:59:59:24	Time code setting. 00H00M00S00F through 23H59M59S24F can be set.
102*	U-BIT PRESET	[00000000] ~ FFFFFFFF	[00 00 00 00] ~ FF FF FF FF	User bit setting. Eight-digit hexadecimal data can be set and be recorded on a tape.
105	CHARACTER POSITION	[00] /01/02~15	[OFF] /1/2/~15	Sets the position to display the characters on the monitor screen.
106	CHARACTER SIZE	[0] /1	[SMALL] /LARGE	Selects the size of the displayed characters. **SMALL:** Small characters **LARGE:** Large characters
200	SETUP GRADE	[0] /1	[BASIC] /ENHANCED	Selects the grade of dial menu operation. **BASIC:** Basic functions, menu number 101 to 200 can be set. **ENHANCED:** All functions, menu number 101 to 225 can be set. **Note** Normally, select BASIC. To use the enhanced functions, select ENHANCED.

* Functions of the menu number 101 and 102 operate only when the optional BKU-705 time code generator/reader is installed in the VO-9850P.

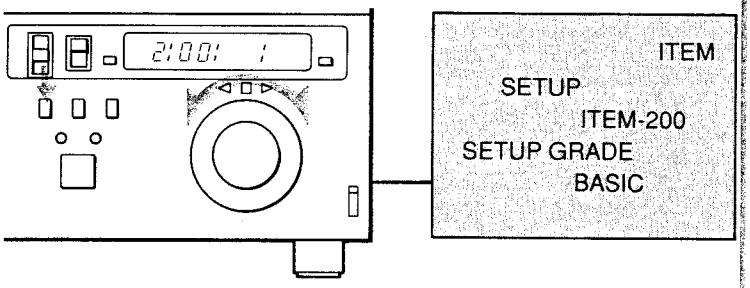
Operation

Selects a menu and sets the data while monitoring the video monitor screen or the time counter display.

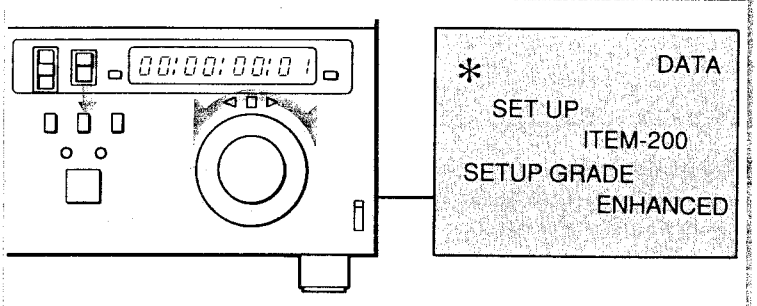
1 **Prepare as follows before dial menu operation.**
Dial menu operation mode is obtained, and the ◄, ■, and ► lamps light, and the time counter display starts blinking. One of the menu number 101 through 200 is displayed on the monitor screen. On the time counter display, the data of the item displayed on the video monitor is shown.


CTL/TC/DIAL MENU selector → DIAL MENU
REMOTE/LOCAL selector → LOCAL
*
SET UP
ITEM-105
CHARACTER POSITION
4
Input a video signal and set the unit in stop (E-E) mode.
Press the search dial to obtain the jog mode*.

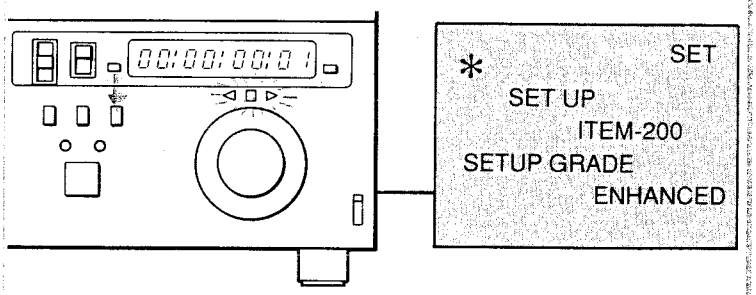
2 **To select a menu, turn the search dial while pressing the MENU button.**



3 **To select a data, turn the search dial while pressing the DATA button.**
- To select the position of setting to set the time code or user bit data, turn the search dial without pressing the DATA button.



4 **To set the data, press the SET button.**
The ◄, ■, and ► lamps blink for a second, and the displayed data is stored in memory. Then the blinking stops.



* The SHUTTLE and JOG lamps do not light in the dial menu operation mode. If the search dial turns freely, you are operating in the jog mode. If the dial has clicks, you are operating in the shuttle mode.

- The set data can be kept even if the power is turned off.
- When the menu number 200 is set to "ENHANCED", one of the all items of menu number 101 to 225 is displayed when the unit enters the dial menu operation mode.

To terminate the dial menu operation

Set the CTL/TC/ DIAL MENU selector to TC or CTL. The displayed data disappears, and the ordinary operation will be possible.

Enhanced functions

[ ] indicates the factory set data.

The enhanced functions can be set when the menu number 200 of the basic function is set to "ENHANCED"

Menu No.	Contents	Data		Contents
		On time counter display	On monitor screen	
201	ERROR STATUS	---------- ERROR-02 ERROR-10 ERROR-20 ERROR-21 ERROR-22 ERROR-23 ERROR-90 ERROR-99	NONE TAPE SLACK HUMID SYSTEM ERROR no display SYSTEM ERROR 50 SYSTEM ERROR 60 no display no display	Self diagnostic function. When an error occurs during operation, an error code is displayed on the time counter display. In this case, select this menu, and the error name corresponding to the error will be displayed on the monitor screen. **Notes** • When "ERROR-10" is displayed, refer to "Moisture condensation" on page 47. • When errors of the error number 20 and after occur, please consult your Sony service facility.
203*	PHASE CORRECTION	0/[1]	OFF/[ON]	Selects whether or not the phase correction of LTC generated by the time code generator should be controlled. **OFF:** No phase correction is controlled. **ON:** Phase correction is controlled.
204*	U-BIT BINARY GROUP FLAG	[00] / 01/ 10/ 11/	[NOT SPECIFIED] / ISO-CHARACTER/ UNASSIGNED-1/ UNASSIGNED-2	Sets the status of the user bit generated by the time code generator. **NOT SPECIFIED:** Character setting is not specified. **ISO CHARACTER:** 8-bit character setting based on ISO-646 and ISO-2022. **UNASSIGNED 1:** Undefined **UNASSIGNED 2:** Undefined
205	HOUR METER (DRUM)	[00000] ~ 15000	[00000H] ~ 15000H	Displays the accumulated time of the rotation of the upper head drum. The data from 0 to 15,000 hours can be displayed. Use the data for the reference of head replacement.
206	HOUR METER	[00000] ~ 15000	[00000H] ~ 15000H	Displays the accumulated power-on time. The data from 0 to 15,000 hours can be displayed.

207	STILL TIMER	00/01/~/[15]	0.5/1/~/[8]	Sets the time to enter the tape protection mode. To prevent the video head from clogging or to reduce the tape damage, the unit automatically enters the tape protection mode after the fixed time has passed in stop or still mode. This item sets the transition time from stop or still mode to the tape protection mode. The time can be set between 0.5 second and 8 minutes.
209	SELECTION FOR SEARCH DIAL ENABLE	0/ [1]	DIRECT/ [VIA SEARCH BUTTON]	Selects the search dial function. **DIRECT:** When the search dial is turned in a mode other than record or edit, the unit enters the search mode. **VIA SEARCH BUTTON:** When the search button is pressed, the unit enters the search mode.
214	PREROLL TIME	00/01/~/[05] ~/15	0/1/~/[5] ~/15	Sets the preroll time. The time can be set from 0 to 15 seconds.
217	EDIT DELAY	0/[1]	2F/[6F]	Sets the frame numbers required to start recording after accepting the REC command from the control unit while editing. **2F:** Recording will start 2 frames after accepting the command. The audio and video signals start to be recorded together at the IN point. **6F:** Recording will start 6 frames after accepting the command. The edit timing of audio and video signals is compensated. **Note** Set the data according to the editing control unit to be used.
218	PINCH ON DELAY	00/01/02~/[09] ~/ 15	0/1/~/[5] ~/15	Sets the time required to start tape transportation after the PLAY command is sent.
224	TAPE PROTECTION	[0] / 1	[STEP FWD] / LONG PAUSE	Selects the tape protection mode. After the time set in menu 207 has passed, the unit enters the operation selected in this menu. **STEP FWD:** The tape starts running in the forward direction at a speed of 1/30 time normal speed. **LONG PAUSE:** The unit enters the long pause mode.
225	NOISELESS STILL	[0] /1	[OFF] /ON	**ON:** During search operation, guard band noise does not appear at the middle of the monitor screen. **OFF:** During search operation, guard band noise may appear on the monitor screen.

* Functions of the menu number, 203 and 204 operate only when the optional BKU-705 time code generator/reader is installed in the VO-9850P.

Specifications

System

Recording system	Rotary 2-head helical scan Luminance: FM recording Color signal: converted subcarrier direct recording
Video signal system	CCIR standards, PAL color

Video

Inputs	VIDEO IN (BNC type) × 2 1.0 Vp-p±0.3 Vp-p, 75 ohms, unbalanced, sync negative DUB IN (7-pin) ×1
Outputs	VIDEO OUT (BNC type) × 1 1.0 Vp-p±0.2 Vp-p, 75 ohms, unbalanced, sync negative MONITOR TV (8-pin) x 1 DUB OUT (7-pin) × 1 MONITOR VIDEO (BNC type) × 1
Horizontal resolution	SP mode recording: 330 lines (both B/W and color)
S/N	SP mode Color: more than 46 dB Luminance (Y): more than 48 dB High-band format more than 46 dB (color)
Sync signal input	SYNC IN (BNC type) × 1 2.5 Vp-p (1 to 5 Vp-p), 75 ohms, unbalanced
RF (OFF TAPE)	(BNC type) × 1 0.5 (0.3 to 1.0 Vp-p), 75 ohms, unbalanced
Recording level control	Automatic and manual

Audio

Input	AUDIO LINE IN CH-1/L, CH-2/R (XLR 3-pin female) × 1 each +4 dB, 10 k ohms, balanced MICROPHONES CH-1/L, CH-2/R (phone jack) × 1 each −60 dB, 3 k ohms, unbalanced
Outputs	AUDIO LINE OUT CH-1/L, CH-2/R (XLR 3-pin male) × 1 each +4 dBm (at 600 ohm load), balanced MONITOR AUDIO (phono jack) × 1 −5 dB (at 47 k ohm load) MONITOR TV (8 pin) × 1 HEADPHONES (stereo phone jack) For 8-ohm headphones Level adjustable (from −26 to −46 dB)
S/N	With Dolby NR off 52 dB (KSP, KSP-S tapes) 50 dB (KCA, KCS tapes) (both channels 1 and 2 at 3% distortion)
Frequency response	50 to 15,000 Hz ±3 dB (both audio channels 1 and 2 with Dolby NR off)
Recording level control	Manual or limiter selectable

Time code

Input	TIME CODE IN (BNC type) x 1 0 dB ±6 dB, 10 k ohms, unbalanced (0 dB = 1.55 Vp-p)
Output	TIME CODE OUT (BNC type) x 1 0 dB ±3 dB, low impedance, unbalanced

Edit

Assemble	Video and audio channel 1 and audio channel 2 (simultaneously)
Insert	Video, audio channel 1 and/or audio channel 2 independently (selectable)
Preroll	Possible
Automatic editing	Possible with the RM-450CE Automatic Editing Control (optional) Accuracy: ±2 frames (This value does not apply if the F FWD or REW button is used during editing.)

Other functions

Memory backup of mark in operation	3 years from shipment
Pause	A still picture is obtained with long pause function
Search	Still, $^1/_{30}$ to 8 times normal speed in both forward and reverse directions
Tracking control	Possible
Skew control	Possible
Sync system	Automatic switching between internal and external
Dropout compensator	Built-in

Tape transport

Tape speed	95.3 mm/sec.
Recording and playback time	Approx. 60 minutes (with KSP-60)
Fast forward and rewind time	Within 4 minutes (with KSP-60)
Wow and flutter	Less than ±0.23% p-p (DIN)
Tape compatibility	U-matic video cassette tapes
Usable tapes	KSP, KSP-S, KCA-BRS, KCS-BRS, KCA-XBR, KCS-XBR type

General

Power requirements	220 – 240 V AC, 50/60 Hz
Operating voltage	198 – 264 V AC
Power consumption	95 W (with the BKU-704 or BKU-705, BKU-703 and RM-440)
Operating position	Horizontal (up to 20 degrees)
Storage temperature	–20°C to +60°C (–4°F to 140°F)
Operating temperature	5°C to 40°C (41°F to 104°F)
Dimensions	426 × 238 × 513 mm (w/h/d) (16 7/8 x 9 3/8 x 20 1/4 inches) including projecting parts and controls
Weight	Approx. 21.4 kg (47 lb 3 oz)
Supplied accessories	AC power cord (1) Operating instructions (1)

Design and specifications are subject to change without notice.

Recommended video equipment and accessories

Editing Control Unit RM-450CE, RM-440 (when the BKU-703 installed)
Color Video Monitor Sony CVM and PVM series
Color Video Camera Sony DXC series
Time code generator/reader BKU-705
Time code reader BKU-704
33P editing interface BKU-703
Remote Control Unit RM-500, RM-580 (when the BKU-703 installed)
Cleaning Cassette KCS-1CL
Remote Control Cable RCC-5F (33-pin), RCC-5G (9-pin)
Dubbing Cable VDC-5 (5 m)
Monitor Connecting Cable VMC-3P (3 m), VMC-5P (5 m), VMC-10P (10 m)
Multi Remote Control Unit RM-555 (when the BKU-703 installed)
Video and Audio Switcher BVS-500
VTR Selector RM-V5
Rack mount kit RMM-501

Troubleshooting

Should you have a problem on your recorder, first check the three items in Check 1 and then the appropriate item in Check 2 or Check 3.

CHECK 1

1 **Check that the AC power cord is firmly connected.**

2 **Check that the POWER switch is set to ON.**

3 **Check the connections. (See pages 18 to 19.)**

CHECK 2

Symptoms	Possible causes and corrective actions
AUTO OFF lamp lights and function buttons do not function. "ERROR-10" is displayed on the time counter display.	Moisture has condensed inside the unit. Keep the power on and wait until the lamp goes off indicating that the moisture has evaporated (see page 47).
The tape suddenly stops and function buttons do not function. "ERROR-02" is displayed on the time counter display.	Eject the cassette and take up the leader tape manually. Reinsert the cassette and press function buttons again. If the recorder does not function, turn off the recorder and contact your nearest Sony service facility.
The STANDBY lamp remains lit and the recorder does not operate even though the lamp of the function button pressed is lit. "ERROR-02" is displayed on the time counter display.	
The cassette cannot be ejected.	Turn off the recorder and contact your nearest Sony service facility.

CHECK 3

Symptoms	Corrective actions
A cassette cannot be inserted.	• Insert the cassette with the label side up. • Check whether another cassette has already been inserted. • Check whether the AUTO OFF lamp is lit.
The tape doesn't run when any of the function buttons is pressed.	• Check that the REMOTE/LOCAL switch is not set at REMOTE. • Check whether the STANDBY lamp is lit. When so, once turn off the power.
Recording cannot be done.	• Check that the REC lamp is lit. • Check that the button on the bottom of the cassette is in place. • Check the INPUT SELECT switch setting. • Adjust the audio recording level. • Prepare the program to be recorded.
Snow or streaks appear on the playback picture.	• Adjust the TRACKING control. • Clean the video head. • Check that the MODE SELECT switch is not set at TBC when no time base corrector is used.
Hooking distortion appears at the upper part of the playback picture.	• Adjust the SKEW lever.
The picture has no color, or does not maintain the correct hues.	• Set the COLOR LOCK switch to the position marked [.].

Sound is not heard.	• Check the AUDIO MONITOR switch setting.
Editing cannot be done.	• Check that the MODE SELECT switch is set to EDIT. • Check that the appropriate edit mode lamp is lit. If not, press the button (which is lit) and press the button of the desired mode. • Check that the button on the bottom of the cassette is in place.

Moisture condensation

When the unit is moved directly from a cold place to a warm place, or when the unit is operated in a place with high humidity, moisture may condense inside the unit. If the tape runs in this condition, it may adhere to the head drum or the tape guide and be damaged. To prevent this possibility, the unit is equipped with a moisture detector. The AUTO OFF lamp lights and the time counter display indicates "ERROR-10" to indicate that moisture has been detected inside the unit. When this lamp is lit, the cassette is automatically ejected, if it is inserted, and the unit does not function, even if any of the function buttons is pressed.

- When the unit is first moved to place in which it is subjected to condensation, we recommend you to wait for about ten minutes and to turn the power on so that the moisture detector will operate.

Video head cleaning

If the picture temporarily disappears or if snow or noise show up in the picture, the video head is contaminated and should be cleaned. Use the optional KCS-1CL cleaning cassette and perform cleaning as follows.

1 Insert the cleaning cassette.

2 Press the PLAY ▶ button.

3 Let the cleaning cassette run for about 30 seconds and then press the STOP ■ button.

4 Press the EJECT ⏏ button to remove the cleaning cassette.

- Do not run a cleaning cassette for more than 30 seconds at a time, nor use it unless the picture symptoms clearly indicate the need for head cleaning. Excessive use of the cleaning cassette will shorten the life of the heads.
- Do not rewind the cleaning cassette every time it is used. When the tape is used to its end, then rewind it.
- You can run through a cleaning cassette several times, although it does gradually become less effective.

Video head replacement

If picture quality is still deficient after cleaning, the video heads may need to be replaced. The life of the heads is approximately 500-1000 hours of use. With this unit, the accumulated operation time of the heads can be checked with dial menu 205 HOUR METER (DRUM).

Note

Regarding head replacement, please consult your Sony service facility.

AVERTISSEMENT

Afin d'éviter tout risque d'incendie ou d'électrocution, ne pas exposer l'appareil à la pluie ou à l'humidité.

Afin d'écarter tout risque d'électrocution, garder le coffret fermé. Ne confier l'entretien de l'appareil qu'à un personnel qualifié.

Attention
Des programmes de télévision, films, bandes vidéo et autres peuvent être protégés par des droits d'auteur.
L'enregistrement non autorisé de tels matériaux risque de constituer une violation de ces droits d'auteur.

REMARQUE
Cet appareil est conforme aux directives 76/889 et 82/449 de la CEE en ce qui concerne la suppression des interférences.